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A DDC BIBLIOGRAPHY ON
COMPUTERS IN INFORMATION SCIENCES

(Information Sciences Series)

VOLUME I OF III VOLUMES

DDC-TAS-68-49

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OCTOBER 1968

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PREFACE

Any discussion of information systems of the future predicts dynamic interactions between the user and the computer. This bibliography compiles references, cataloged by DDC since 1953, that deal specifically with the role of computers in the information sciences.

The 488 unclassified and unlimited references are divided into two volumes. Volume I contains 249 references grouped under two major headings: Time Shared, On-Line, and Real Time Systems; and Computer Components. Volume II contains 239 references grouped under three major headings: Artificial and Programming Languages, Computer Processing of Analog Data, and Computer Processing of Digital Data. These headings correspond directly with those of the Panel on Information Technology, Committee on Scientific and Technical Information, Federal Council for Science and Technology.

The references are arranged in accession number (AD number) sequence within each heading. Four indexes, AD-Numeric, Corporate Author/Monitoring Agency, Personal Author, and Contract, are appended for each volume to facilitate access to references.

An unclassified and limited version has been compiled and will be announced in the Technical Abstract Bulletin (TAB).

BY ORDER OF THE DIRECTOR, DEFENSE SUPPLY AGENCY

OFFICIAL

ROBERT B. STEGMAIER, JR.
Administrator
Defense Documentation Center

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TIME SHARED, ON-LINE AND REAL TIME SYSTEMS

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-285 851
MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS LAB
A TIME SHARING SYSTEM FOR THE PDP-1 COMPUTER (U)
IV YATES,JOHN E.!

UNCLASSIFIED REPORT

DESCRIPTORS: *DIGITAL COMPUTERS, *PROGRAMMING (COMPUTERS), SCHEDULING (U)

A SYSTEM FOR TIME-SHARING A PDP-1 DIGITAL COMPUTER WITH SEVEN TYPEWRITERS, TWO PAPER TAPE PUNCHES, TWO PAPER TAPE READERS, AND TWO CRT DISPLAYS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-414 564
THOMPSON RAMO WOOLDRIDGE INC CANOGA PARK CALIF
AN ON-LINE COMPUTING CENTER. (U)
DESCRIPTIVE NOTE: FINAL REPT., 11 FEB 62-11 FEB 63,
110P FRIED,GURTON D. ;
CULLEN,GLEN J. ;
MONITOR: RADC TDR63 160

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, DIGITAL COMPUTERS), (*DIGITAL COMPUTERS, DATA PROCESSING SYSTEMS), PROGRAMMING (COMPUTERS), MATHEMATICAL LOGIC, COMPUTER LOGIC (U)
IDENTIFIERS: INFORMATION PROCESSING, ON-LINE COMPUTING, 1963 (U)

AN ON-LINE COMPUTING SYSTEM HAS BEEN DEVELOPED WHICH ALLOWS DIRECT USE OF A HIGH SPEED DIGITAL COMPUTER BY MATHEMATICIANS AND SCIENTISTS IN THEIR SPECIALIZED FIELDS. THIS REPORT DESCRIBES THE SYSTEM IN DETAIL FROM A USER'S POINT OF VIEW. FOR REFERENCE PURPOSES, THE REPORT INCLUDES A LISTING OF ALL COMPUTER PROGRAMS USED IN THE SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00394

AD-420 516
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
REAL-TIME COMPUTER STUDIES OF BARGAINING BEHAVIOR:
THE EFFECTS OF THREAT UPON BARGAINING, (U)
SEP 63 12P SHURE,GERALD H. ;
MEEKER,ROBERT J. ;
REPT. NO. SP1143 000 01
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SOCIAL COMMUNICATION, PSYCHOLOGY), (*BEHAVIOR, FOREIGN POLICY), (*POLITICAL SCIENCE, EMOTIONS), OPERATIONS RESEARCH, SIMULATION, COMPUTERS (U)
IDENTIFIERS: 1963, BARGAINING, THREAT, INTERNATIONAL RELATIONS, HOSTILITY, REAL TIME (U)

REPORTS ON A COMMUNICATION GAME, IN WHICH THE COMPUTER IS USED AS AN EXPERIMENTAL TOOL FOR ON-LINE ANALYSIS, UMPIRING, CONTROL AND RECORDING OF SUBJECT BEHAVIOR. ALSO REPORTS CHAT THE COMPUTER IS PROGRAMMED TO AID IN THE COLLECTION AND ASSESSMENT OF SUBJECTIVE DATA - TO PROBE SUBJECTS' AS TO THEIR INTENTIONS AND PERCEPTIONS AT CRITICAL POINTS IN THE DEVELOPMENT OF THE BARGAINING PROCESS. STATES THAT THESE DATA SHOULD SUPPLANT A GREAT DEAL OF THE NEED TO SPECULATE ABOUT THE PATTERNS OF INTENTION AND PERCEPTIONS WHICH PRODUCE THE OVERT RESULTS OBTAINED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-425 527
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
A REPORT ON A LARGE-SCALE TIME-SHARING SYSTEM. (U)
NOV 63 18P SCHWARTZ,JULES I. I
REPT. NO. SP1361
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PAPER PRESENTED AT THE DIGITAL EQUIPMENT USERS SOCIETY, 18 NOV 63.

DESCRIPTORS: (*COMPUTERS, PROGRAMMING (COMPUTERS)), DESIGN, INPUT-OUTPUT DEVICES (U)
IDENTIFIERS: AN/FSQ-32, 1963, TIME-SHARING SYSTEM (U)

THE SYSTEM DEVELOPMENT CORPORATION, UNDER ARPA SPONSORSHIP, HAS DEVELOPED A TIME-SHARING SYSTEM ON THE Q-32 COMPUTER. TIME-SHARING, IN THIS CASE, IMPLIES SIMULTANEOUS ACCESS TO THE COMPUTER BY A LARGE NUMBER OF INDEPENDENT USERS. THE GOAL OF THE SYSTEM IS TO PROVIDE ESSENTIALLY IMMEDIATE RESPONSE TO QUERIES FROM ALL USERS. USERS HAVE AT THEIR DISPOSAL KEYBOARDS (PRIMARILY TELETYPE), DISPLAYS, AND OTHER COMPUTERS. THESE DEVICES CAN BE OPERATED FROM LOCAL (WITHIN SDC SANTA MONICA) OR REMOTE STATIONS. THE SYSTEM HAS BEEN OPERATIONAL SINCE JUNE, 1963. IT PERMITS PROGRAM PRODUCTION AND DEBUGGING, EXPERIMENTATION WITH HUMAN SUBJECTS, RAPID ON-LINE PROGRAMMING AND COMPUTATION, AND OTHER FUNCTIONS WHICH CAN BENEFIT FROM COMPUTER-HUMAN INTERACTION. THIS PAPER DISCUSSES THE SYSTEM AS IT APPEARS TO THE USER, THE GENERAL DESIGN OF THE SYSTEM, AND RELATES SOME OF THE EXPERIENCE HAD IN USING THE SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AD0396

AD-462 158
MASSACHUSETTS INST OF TECH CAMBRIDGE COMPUTATION CENTER
TIME-SHARING ON A MULTICONSOLE COMPUTER, (U)
MAR 65 23P SAMUEL,ARTHUR L. I
REPT. NO. MAC-TR-17
CONTRACT: NONR4102(01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DIGITAL COMPUTERS, TIME), (*TIME, SCHEDULING), REVIEWS, SCHEDULING, COSTS, CONTROL SYSTEMS, PROGRAMMING (COMPUTERS), PROGRAMMING LANGUAGES (U)
IDENTIFIERS: MAC PROJECT, TIME-SHARING (U)

AFTER A BRIEF HISTORICAL REVIEW AND A DESCRIPTION OF THE THREE BASIC TYPES OF TIME-SHARING SYSTEMS, THE GENERAL PURPOSE TIME-SHARING SYSTEM AS EXEMPLIFIED BY THE M.I.T. CTSS SYSTEM IS DESCRIBED IN GENERAL TERMS, WITH PARTICULAR ATTENTION TO THE WAY THE SYSTEM LOOKS TO THE USER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-470 715
MASSACHUSETTS INST OF TECH CAMBRIDGE
AN ANALYSIS OF TIME-SHARED COMPUTER SYSTEMS. (U)
DESCRIPTIVE NOTE: DOCTORAL THESIS, 29 DEC 64-4 FEB 65,
JUN 65 178P SCHERR,ALLAN L.;
REPT. NO. MAC-TR-18 (THESIS)
CONTRACT: NONR410201
PROJ: NR048 189

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERS, SCHEDULING),
OPERATION, SIMULATION, MATHEMATICAL MODELS,
STATISTICAL PROCESSES, MATHEMATICAL PREDICTION,
PROGRAMMING(COMPUTERS), REAL TIME (U)
IDENTIFIERS: MAC PROJECT, THESIS (U)

SOME OF THE ASPECTS OF THE OPERATION OF TIME-SHARED, INTERACTIVE COMPUTER SYSTEMS ARE ANALYZED. THE EMPHASIS IS ON THE REACTION OF HARDWARE SYSTEMS TO THE DEMANDS THAT ITS USERS MAKE UPON IT. SIMPLY STATED, THE PROBLEM IS TO CHARACTERIZE BOTH TIME-SHARED SYSTEMS AND THEIR USERS IN ORDER TO BE ABLE TO PREDICT THE PERFORMANCE OF THE TWO OPERATING TOGETHER. PORTIONS OF THIS PROBLEM INCLUDE THE SPECIFICATION AND MEASUREMENT OF USER CHARACTERISTICS, THE DEVELOPMENT AND VERIFICATION OF BOTH SIMULATION AND MATHEMATICAL MODELS FOR TIME-SHARED SYSTEMS, AND THE SPECIFICATION AND MEASUREMENT OF PERFORMANCE MATRICS FOR SUCH SYSTEMS. THE USER AND SOME OF THE PERFORMANCE MEASUREMENTS WERE MADE ON PROJECT MAC'S COMPATIBLE TIME-SHARING SYSTEM (CTSS). (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-474 019
MASSACHUSETTS INST OF TECH CAMBRIDGE
CALCULAID: AN ON-LINE SYSTEM FOR ALGEBRAIC
COMPUTATION AND ANALYSIS. (U)
DESCRIPTIVE NOTE: MASTER'S THESIS,
SEP 65 53P WANTMAN,MAYER ELIHU I
REPT. NO. MAC-TR-20
CONTRACT: NONR410201
PROJ: NR048 189

UNCLASSIFIED REPORT

DESCRIPTORS: (*PROGRAMMING(COMPUTERS),
DIGITAL COMPUTERS), REAL TIME, SCHEDULING,
ALGEBRA, PROGRAMMING LANGUAGES, COMPUTER
LOGIC (U)
IDENTIFIERS: CALCULAID, TIME-SHARING SYSTEMS,
MAC PROJECT, OPS, ON-LINE COMPUTER SYSTEMS (U)

OPS IS AN ON-LINE SYSTEM DEVELOPED AT PROJECT MAC. THE PRESENT WORK PROVIDES A POWERFUL AND SIMPLE WAY TO PERFORM NUMERICAL MANIPULATIONS AND CALCULATIONS WITHIN OPS. THE PROGRAM PACKAGE IS CALLED CALCULAID, AND PROVIDES A METHOD OF EXECUTING ALGEBRAIC ASSIGNMENT STATEMENTS, OF WHICH MAD AND FORTRAN ASSIGNMENTS ARE A SUBSET. WHEN THIS ASSIGNMENT-STATEMENT ABILITY IS COUPLED WITH OTHER FEATURES OF THE OPS SYSTEM, MOST OF THE ABILITY OF A COMPILER LANGUAGE IS PROVIDED. BECAUSE THE PROGRAMS WRITTEN IN OPS ARE EXECUTED INTERPRETIVELY, OPS-3 PROGRAMS CAN BE CHANGED AND RE-RUN IMMEDIATELY, WITHOUT BEING RECOMPILED. THE APPLICATIONS OF CALCULAID TO THE ANALYSIS OF A ROUND-ROBIN SCHEDULING MODEL AND TO A PROCESS-CONTROL PROBLEM ARE DISCUSSED, AND CONCLUSIONS ARE DRAWN REGARDING THE SUITABILITY OF RUNNING COMPUTATIONAL PROGRAMS IN AN INTERPRETIVE MODE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-474 443 12/1 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF METALLURGY
MAP. A SYSTEM FOR ON-LINE MATHEMATICAL ANALYSIS. DESCRIPTION OF THE LANGUAGE AND INSTRUCTION MANUAL. (U)
JAN 66 104P KAPLOW ,ROY (STRONG ,STEPHEN (BRACKETT,JOHN (
REPT. NO. MAC-TR-24
CONTRACT: NONR-4102(01)
PROJ: NR-048-189

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERS, MATHEMATICAL ANALYSIS), MAN-MACHINE SYSTEMS, NUMERICAL ANALYSIS, INSTRUCTION MANUALS (U)
IDENTIFIERS: MAC PROJECT, ON-LINE MATHEMATICAL ANALYSIS (MAP) (U)

A SYSTEM FOR ON-LINE MATHEMATICAL ANALYSIS, CALLED MAP, HAS BEEN DEVELOPED FOR USE WITHIN THE M.I.T. COMPATIBLE TIME SHARING SYSTEM, TAKING ADVANTAGE OF THE VARIED USER-MACHINE INTERACTIONS WHICH ARE POSSIBLE. MAP PROVIDES A FACILITY FOR HANDLING COMPLEX ANALYSES, DATA INPUT AND PRESENTATION OF RESULTS WITHOUT REQUIRING ANY COMPUTER PROGRAMMING BY THE USER. THIS REPORT IS A DESCRIPTION OF THE LANGUAGE AND A SELF-TEACHING USER MANUAL! IT DOES NOT DESCRIBE THE TECHNIQUES USED TO IMPLEMENT THE SYSTEM. WHEN GIVEN INCOMPLETE REQUESTS, THE SYSTEM WILL PROVIDE INSTRUCTIONS REGARDING THE USE OF ITS PROCEDURES AND WILL ASK FOR ALL THE PARAMETERS, VALUES AND OPTION DECISIONS WHICH MAY BE REQUIRED. IF THE REQUESTS ARE CORRECT AND SUFFICIENTLY DETAILED, THE COMPUTER WILL PROCEED DIRECTLY TO THE CALCULATIONS AND, ON COMMAND, PRESENT THE RESULTS IN GRAPHICAL OR TYPEWRITTEN FORM. PROVISIONS HAVE ALSO BEEN INCLUDED TO ALLOW THE EXPANSION AND PERSONALIZATION OF THE SYSTEM IN WHATEVER MANNER IS DESIRED BY INDIVIDUAL USERS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-601 649
IIT RESEARCH INST CHICAGO ILL
A STUDY OF DIGITAL COMPUTERS FOR A REAL TIME TRAINING SIMULATION RESEARCH SYSTEM. (U)
DESCRIPTIVE NOTE: REPT. FOR 1 MAY-30 JUN 63
MAY 64 111P ANDRESEN,KENNETH W. ;
EWING,DUNCAN ;
REPT. NO. H6003 2 REV.
CONTRACT: AF33 657 11007 ,PROJ.
PROJ: TASK
MONITOR: AMRL TOR64 22

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DIGITAL COMPUTERS, FLIGHT SIMULATORS), (*FLIGHT SIMULATORS, DIGITAL COMPUTERS), (*REAL TIME, TRAINING DEVICES), SIMULATION, SPECIAL PURPOSE COMPUTERS, ANALOG-TO-DIGITAL CONVERTERS, MULTIPLEX, DIGITAL-TO-ANALOY CONVERTERS, TIME-INTERVAL COUNTERS, SYSTEMS ENGINEERING, CONTROL SEQUENCES (U)
IDENTIFIERS: UDOFT, PB*440 COMPUTER, SDS 930 COMPUTER, F100 AIRCRAFT, EROS SIMULATION (U)

IN THE STUDY PHASE OF THE PROJECT TO PROVIDE A GENERAL PURPOSE LABORATORY FACILITY FOR USE IN RESEARCH IN TRAINING SIMULATION TECHNIQUES, DIGITAL COMPUTER SYSTEMS AND INTERFACE EQUIPMENTS WERE EVALUATED FOR THE APPLICATION. CRITERIA FOR THE SYSTEM EVALUATION WERE OBTAINED FROM PREVIOUS STUDIES, INVOLVING THE F100A AIRCRAFT AND EROS VEHICLE FLIGHT SIMULATIONS USING THE UDOFT COMPUTER FACILITY. REQUIREMENTS FOR THE COMPUTER HINGE ON A REAL ON A REAL TIME OPERATING CAPABILITY WHICH STRESSES HIGH COMPUTATION RATES. SIGNIFICANT CHARACTERISTICS INCLUDE: (1) AN OPERATING RATE IN EXCESS OF 75,000 INSTRUCTIONS PER SECOND ON FLIGHT SIMULATION PROBLEMS. (2) A MEMORY CAPACITY OF AT LEAST 8,000 WORDS, (3) A COMPUTER WORD LENGTH OF AT LEAST 24 BITS, AND (4) AT LEAST THREE INDEX REGISTERS. THE RESULT OF THE STUDY PHASE IS A RECOMMENDATION OF THE PACKARD BELL 440 AS THE CENTRAL COMPUTER OF THE SIMULATION SYSTEM AND AS AN ALTERNATIVE, A RECOMMENDATION OF THE FASTER SDS 9300 COMPUTER IS MADE PROVIDED ITS HIGHER COST AND LATER DELIVERY TIME ARE ACCEPTABLE. THE RECOMMENDED INTERFACE EQUIPMENT WILL INCLUDE A MULTIPLEXED ANALOG-TO-DIGITAL CONVERSION SUBSYSTEM CAPABLE OF DIGITIZING 32 INPUT CHANNELS TO 12 BITS AT A RATE IN EXCESS OF 35,000 CONVERSIONS PER SECOND, A DUAL RESOLUTION DIGITALTO-ANALOG CONVERSION SYSTEM (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-603 972
RAND CORP SANTA MONICA CALIF
JOSS: A DESIGNER'S VIEW OF AN EXPERIMENTAL ON-LINE COMPUTING SYSTEM, (U)
AUG 64 36P SHAW,J. C. 1
REPT. NO. P-2922

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: THIS PAPER WAS PREPARED FOR PRESENTATION AT THE 1964 FALL JOINT COMPUTER CONFERENCE, SPONSORED BY THE AMERICAN FEDERATION OF INFORMATION PROCESSING SOCIETIES, SAN FRANCISCO, 27-29 OCT 64.

DESCRIPTORS: (*SPECIAL PURPOSE COMPUTERS, DATA PROCESSING SYSTEMS), (*DATA PROCESSING SYSTEMS, INPUT-OUTPUT DEVICES), TYPEWRITERS, COMMUNICATION SYSTEMS, COMPUTER STORAGE DEVICES, PROGRAMMING LANGUAGES (U)
IDENTIFIERS: TIME SHARING (COMPUTERS), JOSS (JOHNNIAC OPEN-SHOP SYSTEM) (U)

JOSS (JOHNNIAC OPEN-SHOP SYSTEM) IS AN EXPERIMENTAL ON-LINE, TIME-SHARED COMPUTING SERVICE. IT IS IN DAILY USE BY STAFF MEMBERS OF THE RAND CORPORATION FOR THE SOLUTION OF SMALL NUMERICAL PROBLEMS. THE USERS COMPOSE STORED PROGRAMS AND INTERACT WITH JOSS THROUGH REMOTE TYPEWRITER CONSOLES BY USING A SINGLE, HIGH-LEVEL LANGUAGE. THE SYSTEM IS DESCRIBED WITH EMPHASIS ON THOSE FEATURES WHICH HAVE LED USERS TO ACCEPT IT AS A CONVENIENT NEW TOOL. JOSS PROVIDES USE OF FAMILIAR TYPEWRITERS, EXACT INPUT/OUTPUT, DECIMAL ARITHMETIC, HIGH-LEVEL ALGEBRAIC LANGUAGE WITH ENGLISH PUNCTUATION RULES, EASY MODIFICATION AND REPAIR OF PROGRAMS, AND REPORT-QUALITY FORMATTED OUTPUT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-605 025
MASSACHUSETTS INST OF TECH CAMBRIDGE OPERATIONS RESEARCH CENTER
A MATHEMATICAL ANALYSIS OF COMPUTER TIMESHARING SYSTEMS. (U)
DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT. NO. 20 (MASTER'S THESIS).
JUL 64 IP PATEL,NITIN RATILAL
CONTRACT: NONR4102 01 GRANT ,DA ARO 031 1246150
MONITOR: AROD , 968 37

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON FUNDAMENTAL INVESTIGATIONS IN METHODS OF OPERATIONS RESEARCH, REPT. ON PROJ. MAC.

DESCRIPTORS: (*COMPUTERS, SCHEDULING), (*SCHEDULING, COMPUTERS), REAL TIME, TIME STUDIES, OPERATIONS RESEARCH, MANAGEMENT ENGINEERING, MATHEMATICAL ANALYSIS (U)
IDENTIFIERS: ROUND ROBIN SYSTEM, DYNAMIC PRIORITY MULTIPLELEVEL SYSTEM (U)

TWO IMPORTANT AND POPULAR TIME-SHARING SYSTEMS WERE ANALYSED FOR THE EXPECTED WAITS OF REQUESTS. THESE WERE THE ROUND-ROBIN AND THE DYNAMIC-PRIORITY MULTIPLE-LEVEL SYSTEMS. THE ROUND-ROBIN IS VERY COMPLEX IN ALL ITS GENERALITY, HOWEVER WITH THE AID OF A REALISTIC SIMPLIFYING ASSUMPTION THE DESIRED EXPECTED WAITS WERE CALCULATED. THE ROUND-ROBIN UNDER WORST CONDITIONS (I.E. 'FULL LOAD') WAS ANALYSED RIGOROUSLY. THE DYNAMIC-PRIORITY MULTIPLELEVEL SYSTEM CONSIDERED WAS SLIGHTLY DIFFERENT FROM THE ONE IMPLEMENTED BY PROF. CORBATO OF M. I. T. HERE AGAIN RESULTS WERE COMPLEX IN GENERAL, BUT WERE DERIVED GENERALLY NEVERTHELESS, SPECIALIZATION OF THESE RESULTS SHOULD SIMPLIFY THEM SOMEWHAT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-606 175
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
PRELIMINARY ANALYSES OF TIME-SHARED COMPUTER
OPERATION.
DESCRIPTIVE NOTE: SCIENTIFIC REPT., (U)
AUG 64 36P COFFMAN,E. G. ,JR.;
KRISHNAMOORTHI,B. ;
REPT. NO. SP-1719
CONTRACT: SD-97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTERS, SCHEDULING), (*PROGRAMMING (COMPUTERS), OPERATIONS RESEARCH), OPERATION, ANALYSIS, MATHEMATICAL MODELS
IDENTIFIERS: TIME SHARING (COMPUTERS) (U)
(U)

SEVERAL MODELS OF TIME-SHARED COMPUTER OPERATION WERE STUDIED. ALONG WITH THIS ONGOING WORK, STATISTICS WERE ALSO COMPILED ON THE OPERATION OF THE TIME-SHARING SYSTEM ITSELF. IT IS THE PURPOSE OF THE PAPER TO PRESENT PRELIMINARY RESULTS OF THESE EFFORTS AND TO DISCUSS PROBLEMS OF DESIGNING SCHEDULING ALGORITHMS FOR TIME-SHARED COMPUTER SYSTEMS. (AUTHOR)
(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-607 679
MASSACHUSETTS INST OF TECH CAMBRIDGE INSTRUMENTATION LAB
DESIGN OF A SPECIAL PURPOSE DIGITAL SYSTEM. (U)
DESCRIPTIVE NOTE: MASTER'S THESIS.
JAN 58 100P GREEN,ALAN IRWIN
REPT. NO. T-156
CONTRACT: AF04 645 9
PROJ: 52 126

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DIGITAL COMPUTERS, DIFFERENTIAL EQUATIONS), (*DIFFERENTIAL EQUATIONS, DIGITAL COMPUTERS), SIMULTANEOUS EQUATIONS, LINEAR SYSTEMS, INTEGRATION, TAYLOR'S SERIES, NUMERICAL ANALYSIS, EQUATIONS, FUNCTIONS, PROGRAMMING (COMPUTERS), REAL TIME, DIGITAL SYSTEMS, ERRORS, DESIGN (U)

DESIGN SPECIFICATIONS ARE DEVELOPED FOR A SPECIAL PURPOSE DIGITAL SYSTEM REQUIRED TO PERFORM A REAL TIME SOLUTION OF THREE SIMULTANEOUS FIRST ORDER LINEAR DIFFERENTIAL EQUATIONS WITH TIME VARYING COEFFICIENTS. THE NUMERICAL INTEGRATION PROCEDURE FOLLOWED IS BASED ON TAYLOR SERIES EXPANSIONS OF THE VARIABLES TO BE INTEGRATED. A PROGRAM OF TYPICAL COMPUTER INSTRUCTIONS IS PROPOSED FOR THE SOLUTION. AN ERROR ANALYSIS IS PERFORMED TO DETERMINE THE PARAMETERS NECESSARY TO CHARACTERIZE COMPLETELY THE NUMERICAL SOLUTION AND THE COMPUTER. IT IS FOUND THAT A REAL TIME SOLUTION CAN BE ACHIEVED IF A SUFFICIENT NUMBER OF TERMS IS KEPT IN THE TAYLOR SERIES EXPANSIONS. THIS IS FEASIBLE IF THE INPUT DATA ARE SUFFICIENTLY ACCURATE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 342
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF ELECTRICAL ENGINEERING
THE USE OF REAL TIME COMPUTERS FOR INVENTORY CONTROL. (U)
DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT.,
NOV 64 70P SHARP,DONALD D. ,JR.;
REPT. NO. MSEE-64-2;
CONTRACT: NONR581 40

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INVENTORY CONTROL, DIGITAL COMPUTERS), (*DATA PROCESSING SYSTEMS, REAL TIME), (*DIGITAL COMPUTERS, INVENTORY CONTROL), AUTOMATA, MANAGEMENT ENGINEERING, INFORMATION RETRIEVAL, SYSTEMS ENGINEERING, LOGISTICS, INDUSTRIES, FEASIBILITY STUDIES (U)

A REAL-TIME SYSTEM PROVIDES IMMEDIATE ACCESS TO INFORMATION STORED IN THE COMPUTER BY OPERATING PERSONNEL THROUGHOUT THE ORGANIZATION. THE PURPOSE OF THIS THESIS IS TO ANALYZE EXISTING AND PROPOSED REAL-TIME INVENTORY CONTROL SYSTEMS IN ORDER TO DETERMINE THE ADVANTAGES AND DISADVANTAGES OF THIS NEW MANAGEMENT TECHNIQUE. ALTHOUGH REAL-TIME INVENTORY CONTROL SYSTEMS ARE STILL IN THE DEVELOPMENTAL STAGE, AN EXAMINATION OF THE IMPLICATIONS OF THESE REAL-TIME SYSTEMS SHOULD PROVIDE AN INSIGHT INTO THE POSSIBILITIES FOR WIDE SPREAD USE OF REAL-TIME SYSTEMS FOR INVENTORY CONTROL AND FOR OTHER BUSINESS APPLICATIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 500
MASSACHUSETTS INST OF TECH CAMBRIDGE
PROGRAM STRUCTURE IN A MULTI-ACCESS COMPUTER, (U)
64 16P DENNIS,J. B. I
REPT. NO. MAC-TR-11
CONTRACT: NONR4102 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJECT MAC.

DESCRIPTORS: (*PROGRAMMING (COMPUTERS), MULTIPLE OPERATION), DATA PROCESSING SYSTEMS, COMPUTER STORAGE DEVICES, DYNAMICS, SCHEDULING, COMPILERS, DIGITAL COMPUTERS (U)
IDENTIFIERS: MAC PROJECT, MULTI-ACCESS COMPUTERS (U)

A MULTI-ACCESS COMPUTER (MAC) SYSTEM CONSISTS OF PROCESSING UNITS AND DIRECTLY ADDRESSABLE MAIN MEMORY IN WHICH PROCEDURE INFORMATION IS INTERPRETED AS SEQUENCES OF OPERATIONS ON DATA. A SYSTEM OF TERMINAL DEVICES THROUGH WHICH USERS MAY COMMUNICATE WITH PROCEDURES OPERATING FOR THEM, AND MASS MEMORY WHERE PROCEDURES AND DATA MAY BE HELD WHEN NOT REQUIRED FOR IMMEDIATE REFERENCE. ONE FUNDAMENTAL ATTRACTION OF THE MAC CONCEPT IS THE INCREASED PRODUCTIVITY OF 'COMPUTER CATALYZED RESEARCH' THAT RESULTS FROM CLOSE MAN-MACHINE INTERACTION. ANOTHER ATTRACTION IS WEALTH OF DATA AND PROCEDURES THAT ARE ACCESSIBLE TO A LARGE USER COMMUNITY THROUGH THE FILE MEMORY OF A MAC SYSTEM. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 501
MASSACHUSETTS INST OF TECH CAMBRIDGE
SYSTEM REQUIREMENTS FOR MULTIPLE ACCESS, TIME-SHARED COMPUTERS, (U)
64 14P CORBATO,F. J. ;
REPT. NO. MAC-TR-3
CONTRACT: NONR4102 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJECT MAC.

DESCRIPTORS: (*PROGRAMMING (COMPUTERS), MULTIPLE OPERATION), (*COMPUTERS, SYSTEMS ENGINEERING), COMPUTER STORAGE DEVICES, DESIGN (U)
IDENTIFIERS: TIME SHARING (COMPUTERS), MAC PROJECT (U)

RELOCATION EXAMPLES AND SOLUTIONS WERE ELABORATED IN CONSIDERABLE DETAIL TO EXPOSE THE READER TO THE DIFFICULTIES ENCOUNTERED WITH CONTEMPORARY MACHINES WHEN MULTIPLE USER MULTIPLE-PROCESSOR SYSTEMS ARE CONSIDERED. THE FACT THAT EACH PROGRAM MAY PERFORM UNEXPECTEDLY, EVEN TO THE USER, DEMANDS THAT RUNNING PROGRAMS BE ABLE TO BE MOVED AS WELL AS TO GROW AND TO SHRINK. AS MAN-MACHINE INTERACTION BECOMES FASTER, EACH PROGRAM TASK BECOMES MORE INTIMATELY CONNECTED WITH SECONDARY STORAGE AND WITH COMMON SUBPROGRAMS; THUS EFFECTIVE MULTIPROGRAMMING IS ESSENTIAL FOR EFFICIENT USE OF A MULTIPLE ACCESS COMPUTER SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 572
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARING AND USER-ORIENTED COMPUTER SYSTEMS: SOME IMPLICATIONS FOR PUBLIC ADMINISTRATORS. (U)
DESCRIPTIVE NOTE: SCIENTIFIC REPT.,
SEP 64 10P ISAACS,HERBERT H. I
REPT. NO. SP-1772

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED DURING A PANEL DISCUSSION AT THE 1964 NATIONAL CONFERENCE OF THE AMERICAN SOCIETY FOR PUBLIC ADMINISTRATION ON 17 APR 64.

DESCRIPTORS: (*INFORMATION RETRIEVAL, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, INFORMATION RETRIEVAL), DIGITAL COMPUTERS, DATA PROCESSING SYSTEMS, PROGRAMMING (COMPUTERS), OPERATIONS RESEARCH, GOVERNMENT EMPLOYEES, POLICE (U)

THE MATERIAL CONTAINED IN THIS PAPER WAS PRESENTED DURING A PANEL DISCUSSION AT THE 1964 NATIONAL CONFERENCE OF THE AMERICAN SOCIETY FOR PUBLIC ADMINISTRATION ON APRIL 17, 1964. THIS WRITTEN VERSION IS TO BE PUBLISHED IN THE PROCEEDINGS OF THAT CONFERENCE. IT CONTAINS A BRIEF SUMMARY OF SOME NEW ADVANCEMENTS IN COMPUTER SYSTEM TECHNOLOGY AND THEIR IMPLICATIONS FOR PUBLIC ADMINISTRATION. THE NEW TECHNIQUES ARE DESCRIBED IN TERMS OF HOW THEY RELATE TO THREE BASIC CATEGORIES OF INFORMATION PROCESSING TASKS. AN EXAMPLE OF ONE ADVANCED APPLICATION IN THE LOS ANGELES POLICE DEPARTMENT IS THEN GIVEN. THE PAPER CONCLUDES WITH A DISCUSSION OF SOME BROAD IMPLICATIONS FOR THE PUBLIC ADMINISTRATOR. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-609 288
MASSACHUSETTS INST OF TECH CAMBRIDGE
A NEW METHODOLOGY FOR COMPUTER SIMULATION, (U)
64 30P GREENBERGER,MARTIN
REPT. NO. MAC-TR-13
CONTRACT: NONR410201
PROJ: NR048 189

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC PRESENTED AT THE CONFERENCE ON COMPUTER METHODS IN THE ANALYSIS OF LARGE-SCALE SOCIAL SYSTEMS, SPONSORED BY THE JOINT CENTER FOR URBAN STUDIES OF THE MASSACHUSETTS INST. OF TECH. AND HARVARD UNIV. CAMBRIDGE, MASS., 19-21 OCT 64. SEE ALSO AD-604 681.

DESCRIPTORS: (*COMPUTERS, SIMULATION), SPECIAL PURPOSE COMPUTERS, OPERATIONS RESEARCH, DATA PROCESSING SYSTEMS, SCIENTIFIC RESEARCH (U)
IDENTIFIERS: MAC PROJECT, OPS-2, TIME-SHARING PROGRAMMING SYSTEMS, ON-LINE SYSTEMS (U)

COMPUTER SIMULATION IS A COOPERATIVE VENTURE BETWEEN RESEARCHER AND INFORMATION PROCESSOR, BUT THE PROCESSOR'S ROLE CUSTOMARILY BEGINS TOO LATE. THE RESEARCHER CAN BENEFIT SUBSTANTIALLY BY BRINGING THE COMPUTER UP INTO THE EARLIER, CREATIVE PHASES OF THE SIMULATION PROCESS. AN ON-LINE COMPUTER SYSTEM THAT MAKES THIS POSSIBLE IS DESCRIBED. THE OPS SYSTEM IS OPEN-ENDED AND MODULAR IN A VERY FUNDAMENTAL SENSE. THE USER CAN ADD HIS OWN PARTS OVER A PERIOD OF DAYS OR MONTHS AS HE INCREASES HIS UNDERSTANDING OF HIS PROBLEM. THE OPS SYSTEM IS RELATIVELY FREE OF RULES AND FORMATS. THE USER CREATES HIS OWN LANGUAGE AND HIS OWN CONVENTIONS. HE HAS THE WIDEST LATITUDE TO EXPRESS HIS PROBLEM IN ITS NATURAL TERMS AND TO BE INVENTIVE. GRADUALLY HIS SYSTEM TAKES ON AN INDIVIDUAL CHARACTER APPROPRIATE TO THE PURPOSE IT IS TO SERVE. THE USER CAN CREATE HIS OWN SYMBOLS AND HIS OWN MAPPING OF COMMON STORAGE BY MEANS OF STANDARD OPERATORS. HE CAN ALSO CREATE HIS OWN OPERATORS AND ADD THEM WITHOUT LIMIT TO THE SET OF STANDARD OPERATORS SUPPLIED TO HIM. OPERATORS ARE FUNCTIONAL SUBROUTINES PROGRAMMED IN ANY LANGUAGE THAT THE COMPUTER CAN COMPILE, SUCH AS FORTRAN, MAD, OR FAP. OPS-2 PROVIDES THE USER WITH A SIMPLE MECHANISM FOR COMPOUNDING OPERATORS OR CREATING K-OP*S. A K-OP TABLE IN COMMON STORAGE HAS ONE LINE FOR EACH OPERATOR IN THE CONCATENATION OF (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-609 296
MASSACHUSETTS INST OF TECH CAMBRIDGE
THE MAC SYSTEM: A PROGRESS REPORT, (U)
OCT 64 [illegible] FANO,R. M. I
REPT. NO. MAC-TR-12
CONTRACT: NONR41020!

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC. PAPER PRESENTED AT THE SYMPOSIUM ON COMPUTER AUGMENTATION OF HUMAN REASONING, WASHINGTON, D. C., 16 JUN 64, AND PREPARED FOR PUBLICATION IN IEEE SPECTRUM, JAN. 1965. SEE ALSO AD-608 502.

DESCRIPTORS: (*COMPUTERS, MULTIPLE OPERATION), (*SPECIAL PURPOSE COMPUTERS, MULTIPLE OPERATION), (*INFORMATION RETRIEVAL, MULTIPLE OPERATION), REAL TIME, PROGRAMMING (COMPUTERS), PROGRAMMING LANGUAGES, DATA PROCESSING SYSTEMS, DATA TRANSMISSION SYSTEMS, SYSTEMS ENGINEERING (U)
IDENTIFIERS: MAC PROJECT, IBM-7094, MAN-MACHINE SYSTEMS, TIME-SHARING PROGRAMMING SYSTEMS, PDP-1 COMPUTER (U)

THE NOTION OF MACHINE-AIDED COGNITION IMPLIES AN INTIMATE COLLABORATION BETWEEN A HUMAN USER AND A COMPUTER IN A REAL-TIME DIALOGUE ON THE SOLUTION OF A PROBLEM, IN WHICH THE TWO PARTIES CONTRIBUTE THEIR BEST CAPABILITIES. IN ORDER FOR THIS INTIMATE COLLABORATION TO BE POSSIBLE, A COMPUTER SYSTEM IS NEEDED THAT CAN SERVE SIMULTANEOUSLY A LARGE NUMBER OF PEOPLE, AND THAT IS EASILY ACCESSIBLE TO THEM, BOTH PHYSICALLY AND INTELLECTUALLY. THE PRESENT MAC SYSTEM IS A FIRST STEP TOWARD THIS GOAL. THE PURPOSE OF THIS PAPER IS TO PRESENT A BRIEF DESCRIPTION OF THE CURRENT SYSTEM, TO REPORT ON THE EXPERIENCE GAINED FROM ITS OPERATION, AND TO INDICATE DIRECTIONS ALONG WHICH FUTURE DEVELOPMENTS ARE LIKELY TO PROCEED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-609 500
MITRE CORP BEDFORD MASS
THE ROLE OF SIMULATION AND DATA REDUCTION PROGRAMS IN THE DEVELOPMENT OF REAL-TIME SYSTEMS. (U)
DEC 64 31P LAFFERTY,EDWARD L. I
REPT. NO. MITRE SR-126
CONTRACT: AF19 628 2390
PROJ: 416.1
MONITOR: ESD , TDR64 169

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMMAND AND CONTROL SYSTEMS, AIR DEFENSE COMMAND), (+MODELS (SIMULATIONS), COMMAND AND CONTROL SYSTEMS), (+DATA PROCESSING SYSTEMS, COMMAND AND CONTROL SYSTEMS), (+PROGRAMMING (COMPUTERS), COMMAND AND CONTROL SYSTEMS), DIGITAL COMPUTERS, REAL TIME, MONTE CARLO METHOD, SYSTEMS ENGINEERING, GROUND SUPPORT EQUIPMENT, COMMUNICATION SYSTEMS, AIR FORCE, SIMULATION (U)
IDENTIFIERS: AIR FORCE SYSTEM 416, SAGE (U)

THIS REPORT DEALS WITH THE VALUABLE USE OF SIMULATION AND DATA REDUCTION COMPUTER PROGRAMS IN THE ACQUISITION AND ENGINEERING OF COMMAND AND CONTROL SYSTEMS. THE VALUE OF SIMULATIONS, ESPECIALLY IN FACILITATING THE LEARNING PROCESS AND IN EXPEDITING SYSTEM DESIGN, IS DESCRIBED. DATA REDUCTION IS SHOWN TO BE AN EVOLUTIONARY PROCESS AND THE DESIGN OF A DATA REDUCTION SYSTEM SHOULD BE CONSIDERED IN THE VERY EARLY STAGES OF SYSTEM ACQUISITION. SOME MODEL SIMULATION AND DATA REDUCTION SYSTEM SOFTWARE ARE EXAMINED AND SEVERAL CONSIDERATIONS IN THEIR DESIGN ARE ENUMERATED. THE IMPORTANCE OF THE SYSTEM ENGINEER'S RECOGNITION OF THE CONSTANTLY CHANGING NATURE OF ALL HIS INSTRUMENTATION IS STRESSED AS BEING ALL-IMPORTANT IN THE DESIGN OF SUPPORT SYSTEMS WHICH PROVIDE AN OVERALL EFFECTIVENESS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-609 720
TRW SPACE TECHNOLOGY LABS REDONDO BEACH CALIF
THE TRW TWO-STATION, ON-LINE SCIENTIFIC
COMPUTER. (U)
DESCRIPTIVE NOTE: ANNUAL PROGRESS REPT. (FINAL) FOR 14
JUL 63-14 JUL 64,
DEC 64 326P CULLER,G. J. (FRIED,B. D. ;
FIELD,E. C. (POPE,D. ;
REPT. NO. STL-8587-6002-RU-000
CONTRACT: AF30 602 3097
PROJ: 4594
MONITOR: RADC , TDR64 393

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTERS, DATA PROCESSING SYSTEMS),
(*DATA PROCESSING SYSTEMS, COMMAND AND CONTROL
SYSTEMS), (*COMMAND AND CONTROL SYSTEMS, DATA
PROCESSING SYSTEMS), SCIENTIFIC RESEARCH, PLASMA
OSCILLATIONS, EQUATIONS, MATHEMATICAL ANALYSIS,
PROGRAMMING (COMPUTERS), CONTROL SEQUENCES, REAL TIME,
INSTRUCTION MANUALS, SYSTEMS ENGINEERING (U)

THIS REPORT DESCRIBES THE RESEARCH AND DEVELOPMENT
OF ON-LINE TECHNIQUES AND THEIR APPLICATION TO
PROBLEM SOLVING. FOR CONVENIENCE, IT IS ORGANIZED
IN SEVERAL PARTS. PART 1 LISTS THE PUBLISHED
PAPERS DESCRIBING RESEARCH PROBLEMS SOLVED IN THE
COURSE OF THIS EFFORT AND SUMMARIZES THE
COMPUTATIONAL ASPECTS OF THE MULTI-DIMENSIONAL
PROBLEM (A NONLINEAR DIFFUSION EQUATION) WHICH
RECEIVED THE MOST ATTENTION; THE PHYSICAL
SIGNIFICANCE OF THIS PROBLEM AND A DISCUSSION OF THE
RESULTS OBTAINED IS GIVEN IN PART 5. PART 2
CONTAINS A GENERAL DESCRIPTION OF THE ON-LINE SYSTEM
FROM THE USER'S VIEWPOINT, INCLUDING SOME ELEMENTARY
EXAMPLES OF THE 'CONSTRUCTIVE' ASPECTS OF ON-LINE
COMPUTING. IN PART 3 WE HAVE COLLECTED THE ON-LINE
PROBLEM SOLVING TECHNIQUES DEVELOPED IN THIS PROGRAM
WHICH ARE OF GENERAL INTEREST. THESE INVOLVE A
BLENDING OF NUMERICAL AND MATHEMATICAL ANALYSIS
SOMEWHAT DIFFERENT FROM THAT GENERALLY ENCOUNTERED IN
CONVENTIONAL COMPUTING, BEING BEST CHARACTERIZED AS
EMPHASIZING A GLOBAL RATHER THAN A LOCAL APPROACH TO
PROBLEM FORMULATION AND SOLUTION. PART 4
CONSTITUTES A COMPLETE USER'S MANUAL FOR THE PRESENT
SYSTEM. IT GIVES A DETAILED DESCRIPTION OF EACH OF
THE BASIC PROGRAMS. A GENERAL UNDERSTANDING OF THE
ON-LINE SYSTEM CAN BE OBTAINED FROM PART 2; PARTS 3
AND 4 PROVIDE THE DETAILED INFORMATION NEEDED TO (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-610 392
MITRE CORP BEDFORD MASS
SYSTEM DESIGN AND ENGINEERING FOR REALTIME MILITARY DATA PROCESSING SYSTEMS. (U)
JAN 65 72P ISRAEL,D. R. ;
REPT. NO. SR-124
CONTRACT: AF19 628 2390
PROJ: 4164
MONITOR: ESD , TDR64 168

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMMAND AND CONTROL SYSTEMS, AIR FORCE), (*DATA PROCESSING SYSTEMS, COMMAND AND CONTROL SYSTEMS), REAL TIME, FIRE CONTROL SYSTEMS, MILITARY REQUIREMENTS, SYSTEMS ENGINEERING, COMMUNICATION THEORY, COMPUTERS, DISPLAY SYSTEMS, PROGRAMMING (COMPUTERS), AIR FORCE OPERATIONS (U)
IDENTIFIERS: SAGE, NORAD, AIR FORCE SYSTEM 416 (U)

THIS REPORT TREATS THE KEY PROBLEMS AND CONSIDERATIONS ARISING IN THE DESIGN, ENGINEERING, AND IMPLEMENTATION OF MILITARY SYSYEMS IN WHICH REAL-TIME DATA PROCESSING PLAYS A CENTRAL ROLE. THE PRINCIPAL DISTINGUISHING CHARACTERISTICS OF THESE COMMAND AND CONTROL SYSTEMS ARE SUMMARIZED. ORGANIZATIONAL MATTERS RELATING TO RESPONSIBILITIES, OPERATIONAL INPUTS, AND PROCUREMENT ASPECTS ARE DESCRIBED IN THE CONTEXT OF THE OVER-ALL SYSTEM ACQUISITION PROCESS. INITIAL CONSIDERATIONS WHICH SHOULD GUIDE THE OVER-ALL DESIGN ARE DISCUSSED, INCLUDING SUCH OUTSTANDING DESIGN PROBLEMS AS THE PROPER MATCHING OF MAN/MACHINE CAPABILITIES AND THE PROVISION OF ADEQUATE CAPACITY AND FLEXIBILITY FOR CHANGE AND GROWTH. IMPORTANT ASPECTS OF HARDWARE, SOFTWARE, AND TESTWARE DESIGN ARE ALSO DETAILED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-611 866
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARED COMPUTER OPERATIONS WITH BOTH
INTERARRIVAL AND SERVICE TIMES EXPONENTIAL. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
OCT 64 49P KRISHNAMOORTHI,B. IWOOD,ROGER
C. I
REPT. NO. SP-1848/000/00

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTERS, OPERATIONS RESEARCH), (*SCHEDULING, COMPUTERS), (*QUEUEING THEORY, COMPUTERS), REAL TIME, STATISTICAL FUNCTIONS, SYSTEMS ENGINEERING, MATHEMATICAL MODELS, MATHEMATICAL ANALYSIS, PROBABILITY, COMPUTER PERSONNEL, EFFECTIVENESS (U)
IDENTIFIERS: TIME SHARING (COMPUTERS) (U)

THE CONCEPT OF TIME-SHARED COMPUTER OPERATIONS IS BRIEFLY DESCRIBED AND A MODEL OF A TIME-SHARING SYSTEM IS PROPOSED, BASED ON THE ASSUMPTION THAT BOTH INTERARRIVAL AND SERVICE TIMES POSSESS AN EXPONENTIAL DISTRIBUTION. ALTHOUGH THE PROCESS DESCRIBED BY THIS MODEL IS NON-MARKOVIAN, AN IMBEDDED MARKOV CHAIN IS ANALYZED BY EXPLOITING THE FACT THAT THE INSTANTS OF COMPLETION OF A 'QUANTUM' OF SERVICE ARE REGENERATION POINTS. IT IS SHOWN THAT USER CONGESTION POSSESSES A LIMITING DISTRIBUTION, AND THE METHOD OF GENERATING FUNCTIONS IS USED TO DERIVE THIS DISTRIBUTION. THE CONCEPT OF CYCLE TIME IS DISCUSSED AND TWO MEASURES OF CYCLE TIME DEVELOPED FOR A SCHEDULING DISCIPLINE EMPLOYING A SINGLE QUEUE. FINALLY, A NUMBER OF NUMERICAL EXAMPLES ARE PRESENTED TO ILLUSTRATE THE EFFECT OF THE SYSTEM PARAMETERS UPON USER CONGESTION, SYSTEM RESPONSE TIME, AND COMPUTER EFFICIENCY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-611 868
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
SIMULATION OF A TIME-SHARING SYSTEM. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
DEC 64 24P FINE,GERALD H. ;
MCISAAC,PAUL V. ;
REPT. NO. SP-1909
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: FOR PRESENTATION AT THE INSTITUTE OF MANAGEMENT SCIENCES MEETING (TIMS), SAN FRANCISCO, CALIF., 3-5 FEB 65.

DESCRIPTORS: (*COMPUTERS, OPERATIONS RESEARCH), (*SCHEDULING, SIMULATION), QUEUEING THEORY, DIGITAL COMPUTERS, INPUT-OUTPUT DEVICES, REAL TIME, OPTIMIZATION, MODELS (SIMULATIONS) (U)
IDENTIFIERS: TIME SHARING (COMPUTERS) (U)

THE PAPER DESCRIBES THE USE OF SIMULATION TECHNIQUES IN THE ANALYSIS OF TIME-SHARE SYSTEM OPERATION. THE PURPOSE AND GOALS OF THIS RESEARCH EFFORT ARE BRIEFLY OUTLINED AND SOME COMMENTS ON THE ADVANTAGES AND DISADVANTAGES OF DIRECT SIMULATION FOR THIS TYPE OF WORK ARE GIVEN. THE EXISTING SIMULATOR MODELS ARE DESCRIBED IN TERMS OF INPUTS, GENERAL FLOW, AND OUTPUTS; AND THE RESULTS OF INITIAL INVESTIGATIONS WITH THESE MODELS ARE GIVEN. WORK CURRENTLY IN PROGRESS IS DISCUSSED, AND SOME RELATED PROBLEMS THAT MAY POSSIBLY BE STUDIED IN THE FUTURE BY SIMILAR METHODS ARE NOTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 702
MASSACHUSETTS INST OF TECH CAMBRIDGE
CTSS TECHNICAL NOTES, (U)
MAR 65 84P SALTZER,J. H. I
REPT. NO. MAC-TR-16
CONTRACT: NONR4102(01
PROJ: DSR9457

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC.

DESCRIPTORS: (*PROGRAMMING (COMPUTERS), MULTIPLE OPERATION), (*COMPUTERS, SYSTEMS ENGINEERING), REAL TIME, COMPUTER STORAGE DEVICES, INPUT-OUTPUT DEVICES (U)
IDENTIFIERS: MAC PROJECT, IBM 7094, MULTI-ACCESS COMPUTERS, ON-LINE SYSTEMS, TIME SHARING (COMPUTERS), FAP (U)

THIS REPORT IS A TECHNICAL DESCRIPTION OF THE 7094 COMPATIBLE TIME SHARING SYSTEM IN USE AT PROJECT MAC AND THE M.I.T. COMPUTATION CENTER. IT IS DESIGNED TO ACQUAINT A SYSTEM PROGRAMMER WITH THE TECHNIQUES OF CONSTRUCTION WHICH WERE USED IN THIS PARTICULAR TIMESHARING SYSTEM. SEPARATE CHAPTERS DISCUSS THE OVERALL SUPERVISOR PROGRAM FLOW; CONSOLE MESSAGE INPUT AND OUTPUT; THE SCHEDULING AND STORAGE ALGORITHMS; AND A THUMBNAIL SKETCH IS GIVEN OF EACH OF THE SUBROUTINES WHICH MAKE UP THE SUPERVISOR PROGRAM. THIS REPORT WAS PREPARED WITH THE AID OF THE COMPATIBLE TIME-SHARING SYSTEM AND THE TYPSET AND RUNOFF COMMANDS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 898
TRW COMPUTERS CO CANOGA PARK CALIF
AIR TRAFFIC CONTROL STUDIES. TERMINAL AREA
SEQUENCING AND CONTROL. (U)
DESCRIPTIVE NOTE: REPT. NO. 10 (FINAL) 1 JAN 60-28
FEB 61.
FEB 61 263P JACKSON,A. S. (OTTOSON,H. I.)
PARDEE,R. S. (HALL,L. E. (HOLLAND,F. C.)
CONTRACT: FAA BRD112
MONITOR: PB , 159 977

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJECT TASC.

DESCRIPTORS: (+AIR TRAFFIC CONTROL TERMINAL AREAS, SIMULATION), REAL TIME, FLIGHT SIMULATORS, COMPUTERS, DISPLAY SYSTEMS, APPROACH, LANDINGS, CONTROL SEQUENCES, HUMAN ENGINEERING, SYSTEMS ENGINEERING, ALL-WEATHER AVIATION, AVIATION SAFETY (U)

THE MAJOR AREAS OF COVERAGE ARE: (1) PHILOSOPHY AND AIMS OF REAL-TIME SIMULATION IN THE TERMINAL AREA, (2) EQUIPMENT AVAILABLE FOR REAL-TIME SIMULATION, (3) BRIEF DESCRIPTION OF THE SYSTEMS THAT HAVE BEEN SIMULATED, AND (4) RESULTS OBTAINED FROM REAL-TIME SIMULATION AND THEORETICAL STUDIES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 939
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
A DYNAMIC COMPUTER MODEL FOR SIMULATING MILITARY
COMMAND SYSTEMS. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
NOV 64 16P PAGE,LELAND F. I
REPT. NO. SP-1866/000/00
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMMAND AND CONTROL SYSTEMS, ARMED FORCES OPERATIONS), (*GAME THEORY, ARMED FORCES OPERATIONS), (*ARMED FORCES OPERATIONS, GAME THEORY), DYNAMICS, REAL TIME, DIGITAL COMPUTERS, MODELS (SIMULATIONS), MILITARY TACTICS, WEAPON SYSTEMS, NETWORKS (U)

THIS PAPER DESCRIBES A COMPUTER-BASED, WAR-GAMING MODEL THAT OPERATES UNDER A TIME-SHARING SYSTEM ON A LARGE SCALE DIGITAL COMPUTER. THE MODEL SIMULATES A COMMAND SYSTEM COMPRISED OF A COMMAND POST AND A NETWORK OF SUBORDINATE WEAPON CONTROL CENTERS, WEAPON LAUNCH PLATFORMS, WEAPONS, SENSORS, AND THEIR INTERCONNECTING COMMUNICATION LINKS. ITS MAJOR PURPOSE IS TO SERVE AS A GENERAL SIMULATION TOOL THAT CAN BE READILY ADAPTED TO SIMULATE A VARIETY OF COMMAND SYSTEMS AND CONFLICT SITUATIONS. AS SUCH, IT CAN AID IN THE EVALUATION OF PERFORMANCE AND EFFECTIVENESS OF COMMAND-CONTROL SYSTEMS, OPERATING AS VULNERABLE NETWORKS IN DYNAMIC CONFLICT WITH A REACTIVE ENEMY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 940
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARING SYSTEMS: REAL AND IDEAL. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
MAR 65 20P GALLENSON,LOUIS ;
WEISSMAN,CLARK ;
REPT. NO. SP-1872
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, REAL TIME), (PROGRAMMING (COMPUTERS), SCHEDULING), (*SCHEDULING, PROGRAMMING (COMPUTERS)), COMMAND AND CONTROL SYSTEMS, SYSTEMS ENGINEERING, DIGITAL COMPUTERS, REMOTE CONTROL SYSTEMS, COMPUTER STORAGE DEVICES, OPTIMIZATION, MANAGEMENT ENGINEERING (U)
IDENTIFIERS: AN/FSQ-32, TIME SHARING, TELEGRAPH SYSTEMS, ELECTROSTATIC ACCELERATORS (U)

TO AID IN FUTURE DESIGN FOR LARGE-SCALE, GENERAL-PURPOSE, COMPUTER TIME-SHARING SYSTEMS, AN APPRAISAL OF THE EXISTING SDC TIME-SHARING SYSTEM (TSS) SHOWS THAT IMPROVEMENTS FOR INCREASED USER SATISFACTION MAY BE MADE IN CONTINUITY OF SYSTEM OPERATION, RESPONSIVENESS OF THE SYSTEM TO INTERROGATION, AND ACCESSIBILITY TO USERS' PROGRAMMING THROUGH MANY DIFFERENT LANGUAGES AND AT INPUT-OUTPUT CONSOLES LOCATED REMOTE FROM THE COMPUTER. CONTINUITY OF OPERATION DEPENDS UPON RELIABLE EQUIPMENT, PARTICULARLY PERIPHERAL INPUT-OUTPUT DEVICES, AND UPON A RELIABLE TSS EXECUTIVE PROGRAM, 10% OF WHICH IS DEVOTED TO RESPONDING TO A WIDE VARIETY OF HARDWARE, PROGRAM, AND USER'S ERRORS. THOUGH THE MEAN-TIME-TO-FAILURE OF THE SYSTEM IS IMPORTANT, THE MEAN-TIME-TO-DISCONTINUITY (SHORT PERIODS OF LESS THAN A MINUTE WHEN THE SYSTEM STOPS OPERATING) IS ALSO OF SERIOUS IMPORT. ABOUT 7% OF THE TSS EXECUTIVE AND ABOUT 26% OF THE EXECUTIVE OPERATE TIME IS DEVOTED TO THE SCHEDULING OF USER'S PROGRAMS, SO THAT SYSTEM RESPONSIVENESS, CALLED THE 'RESPONSE CYCLE,' IS WITHIN 2 SECONDS OF A USER'S QUERY. THE TSS RESPONSE CYCLE IS DEPENDENT UPON MANY THINGS: PARTICULARLY, HOW MUCH OPERATE TIME, CALLED A QUANTUM, IS GIVEN TO EACH USER AND HOW MUCH TIME IS SPENT SWAPPING PROGRAMS BETWEEN DRUMS AND CORE FOR EACH USER. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-613 271
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
SDC PERSONNEL DATA RETRIEVAL TIMESHARING SYSTEM. (U)
MAR 65 8P
REPT. NO. SP-2008

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PERSONNEL, DATA PROCESSING SYSTEMS), (*DATA PROCESSING SYSTEMS, PERSONNEL), PROGRAMMING (COMPUTERS), PERSONNEL MANAGEMENT, INFORMATION RETRIEVAL, TELETYPE SYSTEMS, DATA (U)
IDENTIFIERS: ECCO PROGRAM, AN/FSQ-32, TIME SHARING (COMPUTERS) (U)

THE PERSONNEL DATA RETRIEVAL TIME-SHARING SYSTEM, USING THE ECCO PROGRAM, OPERATES UNDER THE AN/FSQ-32 TIME-SHARING SYSTEM TO PROVIDE AN ON-LINE INQUIRY CAPABILITY FOR SEARCHING PERSONNEL DATA FILES AND OUTPUTTING THE REQUIRED INFORMATION. THE INQUIRY CAPABILITY IS PROVIDED BY AN ON-LINE MODEL 28 OR MODEL 33 TELETYPE SEND-RECEIVE SET. THIS EQUIPMENT ALLOWS THE INQUIRER TO INSERT THE COMMANDS, CONTROL INFORMATION, AND SEARCH PARAMETERS REQUIRED FOR THE DATA RETRIEVAL. THE SYSTEM PROVIDES THREE BASIC CAPABILITIES FOR PROCESSING PERSONNEL INFORMATION ITEMS CONTAINED IN THE DATA BASE. THESE ARE: (1) A GENERALIZED SEARCH CAPABILITY WHEREBY INDIVIDUALS WITH VARIOUS BACKGROUNDS AND CHARACTERISTICS MAY BE IDENTIFIED FROM THE DATA BASE. (2) A LIST CAPABILITY IS PROVIDED WHICH ALLOWS THE OPERATOR TO SPECIFY A PRINT-OUT OF ANY OF THE INFORMATION CONTAINED IN EACH INDIVIDUAL'S RECORD IN A VARIETY OF FORMATS. (3) A CAPABILITY IS PROVIDED TO PERFORM TWO STATISTICAL OPERATIONS ON ANY QUANTIFIED ITEMS OF INFORMATION IN THE DATA BASE. THE TWO STATISTICAL ROUTINES ARE THE ARITHMETIC MEAN AND THE RANGE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-613 630
RAND CORP SANTA MONICA CALIF
A WORKING DEFINITION OF REAL-TIME CONTROL, (U)
MAR 65 26P NELSON,EDWARD A. ;
REPT. NO. P-3089

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*MANAGEMENT CONTROL SYSTEMS, REAL TIME), (*REAL TIME, MANAGEMENT CONTROL SYSTEMS), MANAGEMENT ENGINEERING, COMPUTERS, CONTROL SEQUENCES, FACTOR ANALYSIS, DECISION MAKING, CONTROL (U)

CONTROL IS THE PROCESS OF ASSURING THE CONFIRMITY OF PLANS AND EVENTS. REAL-TIME CONTROL REQUIRES THAT THE RESPONSE OF EACH ELEMENT OF THE CONTROL SYSTEM IS SUCH THAT THE COMBINED EFFECT OF ALL ELEMENTS PRODUCES RESULTS THAT ARE SUFFICIENTLY EXPENDITIOUS TO PRECLUDE FAILURE OF THE SYSTEM. A REAL-TIME CONTROL SYSTEM IS CONCERNED WITH A FLOW PROCESS THROUGH TIME. IT THUS ARISES OUT OF, AND IS INTIMATELY CONNECTED WITH THE CONCEPTS OF DISTRIBUTION LOGISTICS. THE PROPER FUNCTIONING OF A REALTIME CONTROL SYSTEM REQUIRES THE USE OF EVERY ONE OF ITS ELEMENTS, AND ANY ONE ELEMENT MAY BECOME THE CRITICAL FACTOR. IT IS NOT NECESSARILY THE ELEMENTS THEMSELVES, BUT RATHER THE PRECISE INTERRELATIONSHIP OF THESE ELEMENTS, WITH TIME, THAT MAKES A CONTROL SYSTEM A REAL-TIME CONTROL SYSTEM. PROGRESS IN THE DEVELOPMENT OF REAL-TIME SYSTEMS THEREFORE INVOLVES ATTENTION TO EVERY ELEMENT AND ITS RELATION TO THE OTHERS. THE ELEMENTS OF A REALTIME SYSTEM ARE: FORECASTING, COMMUNICATION, DECISION, CONTROL MECHANISM, AND CRITERIA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-614 040
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
THE TINT USERS' GUIDE, (U)
MAR 65 151P KENNEDY,PHYLLIS R. I
REPT. NO. TM-1933/000/02
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PROGRAMMING (COMPUTERS), INSTRUCTION MANUALS), (*COMPILERS, CONTROL SEQUENCES), (*PROGRAMMING LANGUAGES, COMPILERS), (*TELETYPE SYSTEMS, PROGRAMMING (COMPUTERS)), DATA PROCESSING SYSTEMS, REAL TIME, COMMAND AND CONTROL SYSTEMS, DIGITAL COMPUTERS (U)
IDENTIFIERS: TIME SHARING (COMPUTERS), JOVIAL, TINT (U)

A USERS' GUIDE THAT INSTRUCTS THE PROSPECTIVE TIMESHARING USER ON HOW TO USE TINT, THE ON-LINE TELETYPE JOVIAL INTERPRETER. THIS GUIDE PRESENT A BRIEF INTRODUCTION TO THE TIME-SHARING SYSTEM, A COMPLETE DESCRIPTION OF THE TINT COMMANDS, A COMPLETE DESCRIPTION OF THE DIALECT OF THE JOVIAL LANGUAGE WHICH TINT INTERPRETS, AND THE TSS COMMANDS THAT ARE REQUIRED WHEN OPERATING TINT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-614 992
RAND CORP SANTA MONICA CALIF
JOSS: EXAMPLES OF THE USE OF AN EXPERIMENTAL ON-LINE COMPUTING SERVICE, (U)
APR 65 11P SHAW,J. C. 1
REPT. NO. P-3131

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LIMITED NUMBER OF COPIES CONTAINING COLOR OTHER THAN BLACK AND WHITE ARE AVAILABLE UNTIL STOCK IS EXHAUSTED. REPRODUCTIONS WILL BE MADE IN BLACK AND WHITE ONLY. PRESENTED AT THE SIXTH ANNUAL SYMPOSIUM OF THE PROFESSIONAL GROUP ON HUMAN FACTORS IN ELECTRONICS, THE INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS, BOSTON, MAY 6-8, 1965.

DESCRIPTORS: (*SPECIAL PURPOSE COMPUTERS, NUMERICAL METHODS AND PROCEDURES), (*NUMERICAL METHODS AND PROCEDURES, SPECIAL PURPOSE COMPUTERS), (*DATA PROCESSING SYSTEMS, SPECIAL PURPOSE COMPUTERS), NUMBERS, NUMERICAL ANALYSIS, PROGRAMMING LANGUAGES, INPUT-OUTPUT DEVICES (U)
IDENTIFIERS: JOSS (JOHNNIAC OPEN-SHOP SYSTEM), ON-LINE SYSTEMS, TIME SHARING (COMPUTERS) (U)

CONTENTS (SINCE JOSS IGNORES INPUT LINES BEGINNING WITH AN ASTERISK, THE DEVICE IS USED TO INTERPOSE COMMENTS IN THE EXAMPLES) ON THE ORIGINAL COPY, OUTPUT IS IN BLACK AND INPUT IN GREEN): ELEMENTS OF THE LANGUAGE STORED PROGRAM FOR COMPUTING THE HYPOTENUSE INTEGRATION OF 1/X BY GAUSS 2-POINT RULE ROOT FINDING MATRIX INVERSION WITH SIMPLE PIVOTING ON THE DIAGONAL AN ASTERISK AT THE END CAN KILL THE LINE PRODUCTION OF A FORMATTED TABLE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-615 604
RAND CORP SANTA MONICA CALIF
JOSS: CONVERSATIONS WITH THE JOHNNIAC OPENSHOP SYSTEM, (U)
MAY 65 6P SHAW,J. C. I
REPT. NO. P-3146

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE INTERNATIONAL FEDERATION FOR INFORMATION PROCESSING CONGRESS, NEW YORK, N. Y., 24-29 MAY 65. SEE ALSO AD-603 972, AD-614 992.

DESCRIPTORS: (*SPECIAL PURPOSE COMPUTERS, NUMERICAL METHODS AND PROCEDURES), (*NUMERICAL METHODS AND PROCEDURES, SPECIAL PURPOSE COMPUTERS), (*DATA PROCESSING SYSTEMS, SPECIAL PURPOSE COMPUTERS), NUMERICAL ANALYSIS, PROGRAMMING (COMPUTERS), PROGRAMMING LANGUAGES (U)
IDENTIFIERS: ON-LINE SYSTEMS, JOSS (JOHNNIAC OPENSHOP SYSTEM), TIME SHARING (COMPUTERS) (U)

THE JOHNNIAC OPEN-SHOP SYSTEM (JOSS) IS AN EXPERIMENTAL SYSTEM DESIGNED TO DEMONSTRATE BENEFITS OF ON-LINE INTERACTION WITH A COMPUTER, PARTICULARLY A COMPUTER LIMITED TO SMALL NUMERICAL COMPUTATIONS SUCH AS THE JOHNNIAC. EXAMPLES ARE GIVEN OF CONVERSATION WITH THE COMPUTING SYSTEM WHEREBY COMPUTING REQUIREMENTS ARE MET THAT ARE NOT WELL SATISFIED BY CONVENTIONAL SERVICES. THE FIRST EXAMPLE IS OF THE PRODUCTION OF A TABLE WITH THE CONVERSATION DIRECTING JOSS TO MODIFY THE PROGRAM TO SPECIFY PYTHAGOREAN TRIPLES. JOSS STORES NUMERICAL VALUES, FORMS, AND STEPS THAT BEGIN WITH NUMERICAL LABELS. THE SECOND EXAMPLE IS OF THE ASSISTANCE JOSS GIVES BY EXTENSIVE CHECKING OF THE USER'S INSTRUCTIONS. JOSS COMMENTS FROM A STOCK OF 40 'CANNED' MESSAGES (MOSTLY ERROR MESSAGES), FREQUENTLY ALLOWING THE USER TO REPAIR AN ERROR ON THE SPOT AND DIRECT JOSS TO CONTINUE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-615 658
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
AN EXPERIMENTAL ON-LINE DATA STORAGE AND RETRIEVAL SYSTEM. (U)
FEB 65 42P NOLAN,J. F. (ARMENTI,A. W.)
REPT. NO. TR-377
CONTRACT: AF19 628 500 ,NONR410201
MONITOR: ESD , TDR-65-36

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PROGRAMMING (COMPUTERS), DATA STORAGE SYSTEMS), (*DATA STORAGE SYSTEMS, PROGRAMMING (COMPUTERS)), INFORMATION RETRIEVAL, COMPUTER LOGIC, DATA TRANSMISSION SYSTEMS, COMPUTERS, MULTIPLE OPERATION (U)
IDENTIFIERS: LIST PROCESSING, MAC PROJECT, ON-LINE SYSTEMS, COMPUTER WORDS, TIME SHARING (COMPUTERS) (U)

THIS REPORT DESCRIBES AN EXPERIMENTAL PROGRAM SYSTEM DESIGNED TO TEST AND DEMONSTRATE ON-LINE STORAGE AND RETRIEVAL OF FORMATTED DATA BASED ON COMPLETE INTERNAL DESCRIPTIONS OF THE FILES. THE USE OF INTERNAL DESCRIPTIONS ALLOWS EACH USER (WHO NEED NOT BE A TRAINED PROGRAMMER) TO DEFINE, MODIFY, AND CROSS-ASSOCIATE DATA FILES TO SUIT HIS PARTICULAR NEEDS. THE EXPERIMENTAL PROGRAM SYSTEM WAS IMPLEMENTED BY REMOTE USE OF THE COMPATIBLE TIMESHARING SYSTEM (CTSS) FACILITIES OF PROJECT MAC AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-615 731
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
FUNDAMENTALS OF INFORMATION PROCESSING AND COMPUTERS
FOR STATE AND LOCAL GOVERNMENT, (U)
MAY 65 34P KIBBEE,JOEL M. I
REPT. NO. SP-2073

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, MANAGEMENT ENGINEERING), (*COMPUTERS, MANAGEMENT ENGINEERING), PROGRAMMING (COMPUTERS), REAL TIME, PROGRAMMING LANGUAGES, INPUT-OUTPUT DEVICES (U)
IDENTIFIERS: TIME SHARING (COMPUTERS), ON-LINE SYSTEMS, INFORMATION SYSTEMS, LOCAL GOVERNMENTS (U)

THE PAPER INTRODUCES TO THE PUBLIC MANAGER THE FUNDAMENTALS OF INFORMATION PROCESSING AND COMPUTERS. TO UNDERSTAND COMPUTERS, IT IS NECESSARY TO DISTINGUISH BETWEEN 'HARDWARE' AND 'SOFTWARE.' HARDWARE IS THE PHYSICAL PIECE OF EQUIPMENT. SOFTWARE IS EVERYTHING ELSE--PROGRAMS AND PROCEDURES--NEEDED BY PEOPLE TO MAKE COMPUTERS USEFUL. A COMPUTER SHOULD NOT BE THOUGHT OF AS SOMETHING WHICH EXISTS INDEPENDENTLY OF SOFTWARE. THIS PAPER DEALS FIRST WITH THE INFORMATION SYSTEM--A COLLECTION OF MEN, MACHINES, AND SOFTWARE, WITH EACH ASSIGNED THAT TASK WHICH EACH DOES BEST--AND THEN DISCUSSES HARDWARE AND DATA COMMUNICATIONS. SOFTWARE, MORE IMPORTANT THAN HARDWARE, AND EQUALLY COSTLY, IS TREATED WITH PRIMARILY EMPHASIS ON PROGRAMMER AND USER LANGUAGES. TIME-SHARING, SOFTWARE-SHARING, AND INFORMATION-SHARING ARE COVERED, AS WELL AS THE CONCEPTS OF A UNIFIED INFORMATION SYSTEM AND A COORDINATED INFORMATION SYSTEM. THE PAPER CONCLUDES WITH A SUGGESTION THAT STATE AND LOCAL GOVERNMENT MIGHT, THROUGH JOINT DEVELOPMENT, DECREASE THE COST OF SOFTWARE FOR EACH OF THEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-615 943
RAND CORP SANTA MONICA CALIF
JOSS: EXPERIENCE WITH AN EXPERIMENTAL COMPUTING SERVICE FOR USERS AT REMOTE TYPEWRITER CONSOLES, (U)
MAY 65 19P SHAW,J. C. I
REPT. NO. P-3149

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SPECIAL PURPOSE COMPUTERS, DATA PROCESSING SYSTEMS), (*DATA PROCESSING SYSTEMS, INPUT-OUTPUT DEVICES), TYPEWRITERS, TRAINING, PROGRAMMING LANGUAGES, COMMUNICATION SYSTEMS, COMPUTER STORAGE DEVICES (U)
IDENTIFIERS: JOSS (JOHNNIAC OPEN-SHOP SYSTEM), MAN-MACHINE SYSTEMS, TIME SHARING(COMPUTERS) (U)

DESCRIPTIONS ARE GIVEN OF THE PHILOSOPHY OF THE JOSS SYSTEM, ITS HARDWARE AND SOFTWARE, AND EXPERIENCE WITH ITS USE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-618 931
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
A USER-ORIENTED PRIORITY SCHEME FOR A TIME-SHARING SYSTEM, (U)
JUN 65 35P TOTSCHEK,ROBERT A. I
REPT. NO. SP-2111
CONTRACT: SD-97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PROGRAMMING(COMPUTERS), SCHEDULING), (*COMPUTERS, SCHEDULING), AUTOMATIC (U)
IDENTIFIERS: TIME SHARING(COMPUTERS), ON-LINE SYSTEMS (U)

TIME-SHARING SYSTEMS HAVE YIELDED LARGE PAYOFFS IN COMPUTER PROGRAM PRODUCTION BY PROVIDING FAST TURNAROUND AND INTERACTIVE DEBUGGING. CORPORATIONS OR INSTITUTES THAT INSTALL TIME-SHARING SYSTEMS WILL FIND THAT THEIR SYSTEMS WILL SOON BE SATURATED WITH USERS. UNTIL THE SYSTEM CAPACITY IS EXPANDED, BY MEANS OF HARDWARE OR SOFTWARE CHANGES, IT MAY BE DESIRABLE TO IMPLEMENT A PRIORITY SYSTEM THAT WILL FACILITATE WORK ON CRITICAL PROJECTS AND INSURE THE MEETING OF DEADLINES. THIS PAPER DISCUSSES THE CRITERIA FOR A TIME-SHARING PRIORITY SCHEME AND PRESENTS SOME TECHNIQUES FOR SUPERIMPOSING A PRIORITY SCHEME UPON A TYPICAL TIMESHARING CONFIGURATION. THE SCHEME HAS THREE PRIMARY PRIORITIES: HIGH, LOW, AND NO. USERS ARE ALLOCATED BUDGETS OF HIGH AND LOW PRIORITY TIME FOR THE SUCCEEDING MONTH BASED UPON THEIR CURRENT FORECAST AND PREVIOUS USAGE. ALL USERS ARE GIVEN UNLIMITED NO PRIORITY TIME. THE SALIENT FEATURE OF THE SCHEME IS THAT THE USERS DETERMINE WHEN AND AT WHICH PRIORITY THEY WILL OPERATE. SOME EXAMPLES OF THE BUDGET ALLOCATION PROCESS ARE INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 001
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
INTERARRIVAL STATISTICS FOR TSS. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
AUG 65 14P COFFMAN,E. G. ,JR.;WOOD,R.
C. ;
REPT. NO. SP-2161
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE;

DESCRIPTORS: (*PROGRAMMING(COMPUTERS),
SCHEDULING), (*SCHEDULING, COMPUTERS),
OPTIMIZATION, STATISTICAL FUNCTIONS, STOCHASTIC
PROCESSES, QUEUEING THEORY (U)
IDENTIFIERS: TIME SHARING(COMPUTERS) (U)

THE OPTIMIZATION OF TIME-SHARED SYSTEM PERFORMANCE REQUIRES THE DESCRIPTION OF THE STOCHASTIC PROCESSES GOVERNING THE USER INPUTS AND THE PROGRAM ACTIVITY. THIS PAPER PROVIDES A STATISTICAL DESCRIPTION OF THE USER INPUT PROCESS IN THE SDC-ARPA GENERAL-PURPOSE TIME-SHARING SYSTEM (TSS). THE INPUT PROCESS IS ASSUMED TO BE STATIONARY, AND TO BE DEFINED BY THE INTERARRIVAL TIME DISTRIBUTION. THE DATA OBTAINED APPEAR TO JUSTIFY SATISFACTORILY THE COMMON ASSUMPTION THAT THE INTERARRIVAL TIMES ARE SERIALLY INDEPENDENT. THE DATA DO NOT APPEAR TO JUSTIFY, EXCEPT AS A VERY ROUGH APPROXIMATION, THE USUAL ASSUMPTION OF AN EXPONENTIAL DISTRIBUTION FOR INTERARRIVAL TIME. A MUCH MORE SATISFACTORY APPROXIMATION TO THE DATA CAN BE OBTAINED WITH A BIPHASE OR TRIPHASE HYPEREXPONENTIAL DISTRIBUTION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 003
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
AN EMPIRICAL INVESTIGATION INTO THE BEHAVIOR OF THE
SDC TIME-SHARING SYSTEM. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
AUG 65 78P TOTSCHEK,ROBERT A. I
REPT. NO. SP-2191/000/00
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTERS, SCHEDULING), COMPUTER LOGIC, EFFECTIVENESS, MULTIPLE OPERATION, REAL TIME, INPUT-OUTPUT DEVICES, OPTIMIZATION, OPERATIONS RESEARCH (U)
IDENTIFIERS: TIME SHARING(COMPUTERS), AN/FSQ-32 (U)

THE BEHAVIOR OF A COMPUTER TIME-SHARING SYSTEM IS INTRINSICALLY COMPLEX BECAUSE SUCH A SYSTEM EFFECTS A COMPROMISE BETWEEN ALLOWING JOBS TO RUN TO COMPLETION AND ALLOWING ITS SEVERAL USERS SIMULTANEOUS COMPLETE AND IMMEDIATE ACCESS TO OPERATE AND DEBUG THEIR PROGRAMS. IT IS GENERALLY KNOWN THAT COMPUTER SYSTEMS THAT ALLOW JOBS TO RUN TO COMPLETION TEND TO MAXIMIZE SYSTEM EFFICIENCY; COMPUTER SYSTEMS THAT OFFER THE INDIVIDUAL THE MOST IMMEDIATE POSSIBLE RESPONSE TEND TO MAXIMIZE THEIR UTILITY TO THE USER. IT IS ALSO KNOWN THAT THE RELATIVELY SLOW SPEEDS OF THE I/O DEVICES THAT BUFFER INDIVIDUALS FROM COMPUTERS (AND VICE VERSA) PERMIT THE TIME-SHARING SYSTEMS TO SERVICE SEVERAL USERS AT A REASONABLE COST PER USER. THE REPORT ATTEMPTS TO MAKE MORE PRECISE STATEMENTS ABOUT THE BEHAVIOR OF THE SDC TIME-SHARING SYSTEM, USING DATA OBTAINED FROM 13 ONE-HOUR RECORDINGS. THESE DATA INCLUDE DISTRIBUTIONS OF SERVICE AND INTERARRIVAL TIMES, NUMBER OF USERS, AND OVERHEAD TIMES. IN ADDITION, TWO SCHEDULING LOGICS ARE COMPARED. SEVERAL MEASURES OF EFFECTIVENESS, FROM BOTH A SYSTEM AND AN INDIVIDUAL VIEWPOINT ARE INTRODUCED AND EVALUATED USING THESE DATA. SOME ANALYSES HAVE ALSO BEEN INCLUDED TO PREDICT THE EFFECTS OF SYSTEM CHANGES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AD0396

AD-622 012
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
THE STATIONARY BEHAVIOR OF A TIME-SHARING SYSTEM
UNDER POISSON ASSUMPTIONS. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
SEP 65 29P KRISHNAMOORTHI,B. ;
REPT. NO. SP-2090/000/00

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE AD-622 014.

DESCRIPTORS: (*COMPUTERS, OPERATIONS RESEARCH), (*SCHEDULING, COMPUTERS), (*QUEUEING THEORY, COMPUTERS), STATISTICAL PROCESSES, PROBABILITY, TIME, MATHEMATICAL ANALYSIS (U)
IDENTIFIERS: TIME SHARING(COMPUTERS) (U)

IN A RECENT PAPER (AD-611 866), THE AUTHOR ANALYZED A MARKOV CHAIN IMBEDDED IN THE STOCHASTIC PROCESS (X(T)|T> OR = 0) WHERE X(T) DENOTES THE NUMBER OF ACTIVE CHANNELS AT TIME T IN A TIME-SHARING SYSTEM WITH BOTH INTERARRIVAL AND SERVICE TIMES EXPONENTIAL AND A FINITE NUMBER OF USERS. IN THIS PAPER, BY USING RENEWALTHEORETIC ARRANGEMENTS, THE LIMITING DISTRIBUTION OF X(T) IS OBTAINED AS T GOES TO INFINITY OVER ALL TIME POINTS. THE EQUILIBRIUM WAITING TIME HAS ALSO BEEN ANALYZED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 013
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
OBSERVATIONS ON TIME-SHARED SYSTEMS. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
SEP 65 28P SCHWARTZ,JULES I. I
REPT. NO. SP-2046
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE NATIONAL ACM CONFERENCE (20TH), CLEVELAND, OHIO, 24-6 AUG 65.

DESCRIPTORS: (*COMPUTERS, SCHEDULING), (*DATA PROCESSING SYSTEMS, SCHEDULING), (*SCHEDULING, COMPUTERS), TIME, OPERATION (U)
IDENTIFIERS: ON-LINE SYSTEMS, TIME SHARING(COMPUTERS) (U)

THE PAPER DISCUSSES VARIOUS CONSIDERATIONS FOUND NECESSARY WHEN PLANNING AN ON-LINE TIME-SHARED INSTALLATION, PARTICULARLY FROM THE POINT OF VIEW OF USERS OF SUCH SYSTEMS. BASED MAINLY ON EXPERIENCE WITH THE TIME-SHARING SYSTEM AT THE SYSTEM DEVELOPMENT CORPORATION, ACTUAL SITUATIONS ARE DESCRIBED IN ORDER TO SHOW WHERE PROBLEMS EXIST, AND HOW ADVANTAGES OF SUCH SYSTEMS MAY BE ACCRUED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 016
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARED COMPUTER OPERATIONS WITH BOTH
INTERARRIVAL AND SERVICE TIMES EXPONENTIAL. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
SEP 65 51P KRISHNAMOORTHI,B. ;
WOOD,ROGER C. ;
REPT. NO. SP-1848/000/01
CONTRACT: SD97
MONITOR: AD 611 866 SUPERSED SD

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTERS, OPERATIONS RESEARCH), (*SCHEDULING, COMPUTERS), (*QUEUEING THEORY, COMPUTERS), REAL TIME, STATISTICAL FUNCTIONS, SYSTEMS ENGINEERING, MATHEMATICAL MODELS, MATHEMATICAL ANALYSIS, PROBABILITY, COMPUTER PERSONNEL, EFFECTIVENESS (U)
IDENTIFIERS: TIME SHARING(COMPUTERS) (U)

THE CONCEPT OF TIME-SHARED COMPUTER OPERATIONS IS BRIEFLY DESCRIBED AND A MODEL OF A TIME-SHARING SYSTEM IS PROPOSED, BASED ON THE ASSUMPTION THAT BOTH INTERARRIVAL AND SERVICE TIMES POSSESS AN EXPONENTIAL DISTRIBUTION. ALTHOUGH THE PROCESS DESCRIBED BY THIS MODEL IS NON-MARKOVIAN, AN IMBEDDED MARKOV CHAIN IS ANALYZED BY EXPLOITING THE FACT THAT THE INSTANTS OF COMPLETION OF A 'QUANTUM' OF SERVICE ARE REGENERATION POINTS. IT IS SHOWN THAT USER CONGESTION POSSESSES A LIMITING DISTRIBUTION, AND THE METHOD OF GENERATING FUNCTIONS IS USED TO DERIVE THIS DISTRIBUTION. THE CONCEPT OF CYCLE TIME IS DISCUSSED AND TWO MEASURES OF CYCLE TIME DEVELOPED FOR A SCHEDULING DISCIPLINE EMPLOYING A SINGLE QUEUE. A NUMBER OF NUMERICAL EXAMPLES ARE PRESENTED TO ILLUSTRATE THE EFFECT OF THE SYSTEM PARAMETERS UPON USER CONGESTION, SYSTEM RESPONSE TIME, AND COMPUTER EFFICIENCY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 018
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
LISP 1.5 REFERENCE MANUAL FOR Q-32. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
AUG 65 86P KAMENY,S. L. ;
REPT. NO. TM-2337/101/00
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PROGRAMMING LANGUAGES, INSTRUCTION MANUALS), (*COMPUTERS, SCHEDULING), COMPILERS, COMPUTER STORAGE DEVICES (U)
IDENTIFIERS: AN/FSQ-32, LISP, TIME SHARING(COMPUTERS), PUSHDOWN STORAGE (U)

THE DOCUMENT IS A REFERENCE MANUAL FOR THE Q-32 LISP SYSTEM IN OPERATION UNDER THE TIME-SHARING SYSTEM (TSS) ON THE AN/FSQ-32 COMPUTER. IT DESCRIBES THE WORKING OF THE LISP SYSTEM, AND CONTAINS DESCRIPTIONS OF ALL CURRENTLY AVAILABLE AND INSTALLED FUNCTIONS, EXCEPT FOR INPUT-OUTPUT AND LIBRARY FUNCTIONS GIVEN IN TM-2337/102/00 (AD-622 022). THIS DOCUMENT CONFORMS TO THE CURRENT NUMBERING ON LISP 1.5 DOCUMENTS, AND SUPERSEDES TM-2430/000/00, WHICH WAS A DRAFT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 020
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TRACE MODEL 1. TIMESHARED ROUTINES FOR ANALYSIS, CLASSIFICATION AND EVALUATION. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
SEP 65 58P MOORE,WILLIAM H. ,JR.;
MEEKER,ROBERT J. ;SHURE,GERALD H. ;
REPT. NO. TM-2621
CONTRACT: SD286

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PROGRAMMING(COMPILERS), SCHEDULING), (*COMPUTERS, SCHEDULING), DATA, ANALYSIS, CLASSIFICATION, TELETYPE SYSTEMS, FEEDBACK, OPTIMIZATION (U)
IDENTIFIERS: AN/FSQ-32, TIME SHARING(COMPUTERS), ON-LINE SYSTEMS, JOVIAL, EVALUATION (U)

THE DOCUMENT PRESENTS A USER'S AND PROGRAMMER'S DESCRIPTION OF THE TRACE PROGRAM, WHICH PROVIDES THE USER WITH AN ON-LINE TECHNIQUE FOR SCANNING DATA AND DERIVING VARIABLES. THE TECHNIQUE ASSISTS IN CREATING AND EVALUATING OPTIMAL INDICES FOR EXHIBITING RELATIONS AMONG EMPIRICAL DATA. TRACE IS WRITTEN IN THE TIMESHARING SYSTEM VERSION OF THE JOVIAL LANGUAGE (JTS) FOR THE AN/FSQ-32 COMPUTER AT SDC. THE ON-LINE CAPABILITY OF THE PROGRAM PERMITS IMMEDIATE FEEDBACK TO THE USER ABOUT THE RELATIVE UTILITY OF DERIVED INDICES AND PERMITS ADOPTION OR MODIFICATION OF THESE FOR FURTHER ANALYSES. THE TIME-SHARING CAPABILITY OF THE PROGRAM PERMITS EFFICIENT USE OF THE COMPUTER IN THIS PROCESS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AD0396

AD-622 021
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
THE TINT USERS' GUIDE. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
JUL 65 182P KENNEDY,PHYLLIS R. ;
REPT. NO. TM-1933-000-02
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTERS, INSTRUCTION MANUALS), (*SCHEDULING, COMPUTERS), TELETYPE SYSTEMS, COMPILERS, REAL TIME, MULTIPLE OPERATION, PROGRAMMING(COMPUTERS), COMPUTER PERSONNEL, COMPUTER OPERATORS (U)
IDENTIFIERS: TIME SHARING(COMPUTERS), JOVIAL, TINT, ON-LINE SYSTEMS (U)

THE USERS' GUIDE INSTRUCTS THE PROSPECTIVE TIMESHARING USER ON HOW TO USE TINT, THE ON-LINE TELETYPE JOVIAL INTERPRETER. THE GUIDE PRESENTS A BRIEF INTRODUCTION TO THE TIME-SHARING SYSTEM, A COMPLETE DESCRIPTION OF THE DIALECT OF THE JOVIAL LANGUAGE THAT TINT INTERPRETS, AND THE TSS COMMANDS THAT ARE REQUIRED WHEN OPERATING TINT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 022
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
INPUT-OUTPUT FILE AND LIBRARY FUNCTIONS, THE Q-32
LISP 1.5 MOD. 2.5 SYSTEM. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
SEP 65 16P KAMENY,S. L. I
REPT. NO. TM-2337-102-00
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+PROGRAMMING LANGUAGES, INSTRUCTION MANUALS), (+COMPUTERS, SCHEDULING), COMPILERS, INPUTOUTPUT DEVICES, COMPUTER STORAGE DEVICES, MAGNETIC TAPE (U)
IDENTIFIERS: LISP, AN/FSQ-32, TIME SHARING(COMPUTERS) (U)

THIS DOCUMENT SUPPLEMENTS TM-2337/101/00 (AD-622 018) BY DESCRIBING THE INPUT-OUTPUT, FILE-HANDLING AND LIBRARY FUNCTIONS OF Q-32 LISP 1.5 MOD. 2.5. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-623 738 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
ADVANCED COMPUTER TECHNIQUES APPLICABLE TO SPACE AND RANGE PROBLEMS, (U)
OCT 65 17P WEST,GERALD D. ;
REPT. NO. SP-2197

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTERS, OPERATION), SPACE FLIGHT, RANGES, PROGRAMMING LANGUAGES, PROGRAMMING(COMPUTERS), STANDARDIZATION, MULTIPLE OPERATION, EFFECTIVENESS (U)
IDENTIFIERS: TIME SHARING(COMPUTERS) (U)

COMPUTER INSTALLATIONS SERVING RANGE AND SPACE NEEDS ARE CHARACTERIZED BY A LARGE NUMBER OF USER ORGANIZATIONS, A VARIETY OF PROCESSING TASKS, AND RAPID GROWTH. THESE CHARACTERISTICS TEND TO RESULT IN PROBLEMS IN COMPUTER UTILIZATION. CERTAIN ADVANCED PROGRAMMING CONCEPTS SUCH AS TIME-SHARING AND MULTI-PROCESSING SEEM TO PROVIDE THE MEANS FOR ALLEVIATING THE COMPUTER UTILIZATION PROBLEMS BEING EXPERIENCED BY RANGE AND SPACE SUPPORT INSTALLATIONS. THESE CONCEPTS ARE A PART OF THE METHODOLOGY OF THE COMPUTER APPLICATIONS FIELD, AND ARE DISTINCT FROM THE FUNCTIONAL REQUIREMENTS OF THE COMPUTER USER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AD0396

AD-623 796 9/2
LINCOLN LAB MASS INST OF TECH LEXINGTON
AN EXPERIMENTAL ON-LINE DATA STORAGE AND RETRIEVAL
SYSTEM. (U)
DESCRIPTIVE NOTE: REVISED ED.,
SEP 65 42P NOLAN,JOHN W. ;
ARMENTI,AMEDIO W. ;
REPT. NO. TR-377
CONTRACT: AF19(628)-5167 ,NONR-4102(01)
MONITOR: ESD , TDR-65-466

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REVISION OF MANUSCRIPT SUBMITTED 3
FEB 65.

DESCRIPTORS: (*DATA STORAGE SYSTEMS,
PROGRAMMING(COMPUTERS)),
(*PROGRAMMING(COMPUTERS), DATA STORAGE
SYSTEMS), (*DATA, INFORMATION RETRIEVAL), DATA
PROCESSING SYSTEMS, COMPUTERS, MAN-MACHINE
SYSTEMS (U)
IDENTIFIERS: TIME SHARING(COMPUTERS), ON-LINE
SYSTEMS,FILE STRUCTURES, LIST PROCESSING (U)

THIS REPORT DESCRIBES AN EXPERIMENTAL PROGRAM
SYSTEM DESIGNED TO TEST AND DEMONSTRATE ON-LINE
STORAGE AND RETRIEVAL OF FORMATTED DATA BASED ON
COMPLETE INTERNAL DESCRIPTIONS OF THE FILES. THE
USE OF INTERNAL DESCRIPTIONS ALLOWS EACH USER (WHO
NEED NOT BE A TRAINED PROGRAMMER) TO DEFINE,
MODIFY, AND CROSS-ASSOCIATE DATA FILES TO SUIT HIS
PARTICULAR NEEDS. THE EXPERIMENTAL PROGRAM SYSTEM
WAS IMPLEMENTED BY REMOTE USE OF THE COMPATIBLE
TIME-SHARING SYSTEM (CTSS) FACILITIES OF
PROJECT MAC AT THE MASSACHUSETTS INSTITUTE OF
TECHNOLOGY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-624 110 9/2 6/2
LINCOLN LAB MASS INST OF TECH LEXINGTON
ON LINE DOCUMENTATION OF THE COMPATIBLE TIME-SHARING SYSTEM. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
MAY 65 50P WINETT,JOEL M. I
REPT. NO. TR-387
CONTRACT: AF19(628)-500 ,NONR-4102(01)
PROJ: AF-649L
MONITOR: ESD , TRD-65-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PROGRAMMING(COMPUTERS), DOCUMENTATION), COMPATIBILITY, INFORMATION RETRIEVAL, DATA STORAGE SYSTEMS, PROGRAMMING LANGUAGES, COMPUTERS (U)
IDENTIFIERS: ON-LINE SYSTEMS, TIME SHARING(COMPUTERS),COMIT PROGRAMMING LANGUAGE, DESCRIPTORS, MAC PROJECT (U)

THE DISSEMINATION OF INFORMATION ABOUT COMPUTER PROGRAMS IS HAMPERED BECAUSE OF THE LACK OF CONFORMITY IN DOCUMENTATION, THE DELAYS INHERENT IN ANY DISTRIBUTION SYSTEM, AND THE INABILITY TO SELECT ONLY DESIRED INFORMATION WITHOUT BEING FLOODED WITH INFORMATION WHICH IS NOT OF PRESENT INTEREST. AN ON-LINE SYSTEM FOR STORING AND RETRIEVING INFORMATION ABOUT THE PROGRAMS ASSOCIATED WITH THE COMPATIBLE TIME-SHARING SYSTEM (CTSS) HAS BEEN DEVELOPED TO BE INCLUDED AS A C[illegible] COMMAND. THIS SYSTEM WILL HELP TO DOCUMENT [illegible]E SYSTEM COMMANDS, SUPERVISOR ENTRIES, LIBRARY SUBPROGRAMS, AND PUBLIC PROGRAMS. THESE TYPES OF PROGRAMS HAVE BEEN CHOSEN SINCE THERE IS AN URGENT NEED FOR HAVING THIS DOCUMENTATION AVAILABLE ON DEMAND, I.E., ON-LINE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-624 943 9/2 12/2
MASSACHUSETTS INST OF TECH CAMBRIDGE
QUEUEING MODELS FOR FILE MEMORY OPERATION. (U)
DESCRIPTIVE NOTE: MASTER'S THESIS,
OCT 65 110P DENNING,PETER JAMES
REPT. NO. MAC-TR-21
CONTRACT: NONR-4102(01)
PROJ: NR-048-189

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON PROJ. MAC.

DESCRIPTORS: (*QUEUEING THEORY, COMPUTERS), (*DATA STORAGE SYSTEMS, OPERATION), MODEL THEORY, OPERATIONS RESEARCH, REAL TIME, MULTIPLE OPERATION (U)
IDENTIFIERS: THESES, TIME SHARING(COMPUTERS), MACPROJECT (U)

A MODEL FOR THE AUXILIARY MEMORY FUNCTION OF A SEGMENTED, MULTI-PROCESSOR, TIME-SHARED COMPUTER SYSTEM IS SET UP. A DRUM SYSTEM IN PARTICULAR IS DISCUSSED, ALTHOUGH NO LOSS OF GENERALITY IS IMPLIED BY LIMITING THE DISCUSSION TO DRUMS. PARTICULAR ATTENTION IS GIVEN TO THE QUEUE OF REQUESTS WAITING FOR DRUM USE. IT IS SHOWN THAT A SHORTEST ACCESS TIME FIRST QUEUE DISCIPLINE IS THE MOST EFFICIENT, WITH THE ACCESS TIME BEING DEFINED AS THE TIME REQUIRED FOR THE DRUM TO BE POSITIONED, AND IS MEASURED FROM THE FINISH OF SERVICE OF THE LAST REQUEST TO THE BEGINNING OF THE DATA TRANSFER FOR THE SHORTEST ACCESS TIME QUEUE IS MADE, GIVING THE MINIMUM ACCESS TIME PROBABILITY DISTRIBUTION, EQUATIONS FOR THE NUMBER IN QUEUE, AND EQUATIONS FOR THE WAIT IN THE QUEUE. SIMULATIONS WERE USED TO VERIFY THESE EQUATIONS: THE RESULTS ARE DISCUSSED. FINALLY, A GENERAL MARKOV MODEL FOR QUEUES IS DISCUSSED IN AN APPENDIX. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-625 728 9/2 5/1
MASSACHUSETTS INST OF TECH CAMBRIDGE
THE PRIORITY PROBLEM, (U)
NOV 65 35P GREENBERGER,MARTIN I
REPT. NO. MAC-TR-22
CONTRACT: NONR-4102(01)
PROJ: NR-048-189

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC, PRESENTED AT THE NATIONAL MEETING OF THE OPERATIONS SOCIETY OF AMERICA (27TH), BOSTON, 4 MAY 65.

DESCRIPTORS: (*COMPUTERS, SCHEDULING), MATHEMATICAL ANALYSIS, REAL TIME, COSTS, NONLINEAR SYSTEMS (U)
IDENTIFIERS: MAC PROJECT, TIME SHARING(COMPUTERS),ON-LINE SYSTEMS, MULTIPLE ACCESS SYSTEM (U)

PRIORITY DECISIONS ARISE WHENEVER LIMITED FACILITIES MUST BE APPORTIONED AMONG COMPETITIVE DEMANDS FOR SERVICE. A PRIORITY OPERATION OF CONTEMPORARY INTEREST IS SCHEDULING A TIME-SHARED COMPUTER AMONG ITS CONCURRENT USERS. SERVICE REQUIREMENTS ARE NOT KNOWN IN ADVANCE OF EXECUTION. TO KEEP RESPONSE TIMES SHORT FOR SMALL REQUESTS, SERVICE INTERVALS ARE PARTITIONED AND SEGMENTS ARE SERVED SEPARATELY IN ROUND-ROBIN FASHION. A MATHEMATICAL ANALYSIS PINPOINTS THE TRADEOFF BETWEEN OVERHEAD AND DISCRIMINATION, IMPLICIT IN THIS PROCEDURE, AND ALLOWS ALTERNATE STRATEGIES TO BE COSTED. EXTENSIONS OF THE SIMPLE ROUND-ROBIN PROCEDURE ARE SUGGESTED, THE OBJECTIVES OF TIME SHARING ARE REVIEWED, AND IMPLICATIONS ARE DRAWN FOR THE DESIGN OF FUTURE PRIORITY AND PRICING SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-627 077 18/4 15/3
EDGERTON GERMESHAUSEN AND GRIER INC SANTA BARBARA CALIF
DASA FALLOUT AND TRANSIT DOSE RATE MEASUREMENT SYSTEM. (U)
DESCRIPTIVE NOTE: PHASE I, MAY 64-JUL 65, DEC 65 110P BROWN,JAMES E. IWEBB,R. I. A.
CONTRACT: DA-49-146-XZ-292
MONITOR: NDL ,DASA TR-71,1680

UNCLASSIFIED REPORT

DESCRIPTORS: (*RADIOACTIVE FALLOUT, RADIATION MEASUREMENT SYSTEMS), (*RADIATION MEASUREMENT SYSTEMS, RADIOACTIVE FALLOUT), DOSE RATE, MEASUREMENT, REAL TIME, DATA PROCESSING SYSTEMS, DATA TRANSMISSION SYSTEMS, TELEMETER SYSTEMS, NUCLEAR EXPLOSIONS (U)

THE REPORT PRESENTS THE RESULTS OF A STUDY AND DESIGN EFFORT THAT DEMONSTRATES THE FEASIBILITY OF AN IMPROVED SYSTEM FOR THE MEASUREMENT AND COLLECTION OF RESIDUAL RADIATION DOSE RATE INFORMATION. THE IMPROVED SYSTEM CONSISTS OF AS MANY AS 100 DATA COLLECTION POINTS AT WHICH UP TO 200 DETECTORS MAY BE LOCATED. DATA ARE TELEMETERED TO A CENTRALLY LOCATED ONLINE COMPUTER FOR REAL TIME COMPUTATION. SUITABLE PERFORMANCE CHARACTERISTICS AND SYSTEM COMPATIBILITY HAVE BEEN DEMONSTRATED BY AN EXPERIMENTAL DETECTOR STATION FABRICATED FOR TEST AND EVALUATION. OTHER SYSTEM COMPONENTS WERE SELECTED FROM AVAILABLE OFF-THE-SHELF COMMERCIAL ITEMS. INCLUDED IN THE SYSTEM IS A PROVISION FOR DIFFERENTIATION BETWEEN THE DOSE RATE CONTRIBUTED BY THE DEPOSITED FALLOUT AND THE TRANSIT DOSE RATE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-628 135 9/2
TRW SYSTEMS REDONDO BEACH CALIF
ON LINE COMPUTER SYMBOLIC MANIPULATION. (U)
DESCRIPTIVE NOTE: FINAL REPT. AUG 64-AUG 65,
JAN 66 199P BLACKWELL, FREDERICK W. ;
REPT. NO. 5253-A001-RU000,
CONTRACT: AF 30(602)-3516,
PROJ: AF-4594
TASK: 459404,
MONITOR: RADC , TR-65-376

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PROGRAMMING(COMPUTERS), PROGRAMMING LANGUAGES), (*PROGRAMMING LANGUAGES, DIGITAL COMPUTERS), COMPILERS, DATA PROCESSING SYSTEMS, ALGEBRA (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE DEVELOPMENT IS DESCRIBED OF AN ON-LINE COMPUTER SYSTEM FOR SYMBOL MANIPULATION IN WHICH A USER CAN ARBITRARILY DEFINE SYMBOLS AND RULES FOR OPERATING WITH THESE SYMBOLS, AND THEN INSTRUCT THE COMPUTER ON-LINE TO SELECTIVELY APPLY THE RULES. AT THE BASIS OF THE SYSTEM IS A SMALL SET OF ELEMENTARY SYMBOL MANIPULATION OPERATORS WHICH CAN BE PROGRAMMED ON-LINE TO CARRY OUT MORE COMPLEX SYMBOLIC PROCESSES. THE APPLICATION OF THE SYSTEM TO ALGEBRA IS PRESENTED: THE RESULTANT SYSTEM FOR ALGEBRAIC SYMBOL MANIPULATION ALLOWS THE USER TO HAVE THE COMPUTER APPLY RULES OF ALGEBRA ON-LINE TO TRANSFORM MATHEMATICAL EXPRESSIONS WHICH HE HAS INPUT IN A NATURAL FORM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AOD396

AD-629 667 9/2
GENERAL ELECTRIC CO WASHINGTON D C
THE APPLICATION OF LARGE-SCALE COMPUTERS TO U.S. AIR FORCE INFORMATION SYSTEMS. (U)
DESCRIPTIVE NOTE: FINAL REPT., 15 JAN 65-15 JAN 66,
MAR 66 77P CAMPBELL,JOHN B. ;
MCCABE,JOHN P. ;NEVANS,ESSIE S. ;
CONTRACT: AF 19(628)-4963,
PROJ: AF-2801
TASK: 280101,
MONITOR: ESD , TE-66-137

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*AIR FORCE, WAGES), (*COMPUTERS, PERSONNEL MANAGEMENT), (*AIR FORCE PERSONNEL, COMPUTERS), MATHEMATICAL MODELS, ALGORITHMS, FEASIBILITY STUDIES, REMOTE CONTROL SYSTEMS (U)
IDENTIFIERS: ON-LINE SYSTEMS, TIME SHARING(COMPUTERS) (U)

TWO AIR FORCE FUNCTIONS WERE EXAMINED TO DETERMINE THE FEASIBILITY OF CENTRALIZING THE TASKS AT A COMPUTER CENTER WITH REMOTE ACCESS. THE APPLICATIONS EXAMINED: (1) AN OVERALL PAY SYSTEM, AND (2) A SYSTEM TO AID IN THE ASSIGNMENT OF PERSONNEL TO JOBS, PROVED INTERESTING IN THEIR DEMANDS UPON LARGE-SCALE DATA-HANDLING AND MANIPULATION CAPABILITIES. FEASIBILITY OF BOTH THE PAY AND MAN-JOB MATCH SYSTEMS WAS SHOWN AND EACH WAS EXAMINED AS A TIME-SHARING TYPE OF APPLICATION. THE GENERALIZED TIME-SHARING MODEL SHOWED CENTRALIZATION OF ALL COMPUTATIONAL POWER TO BE MORE ECONOMICAL THAN DISTRIBUTING LOGICAL CAPABILITY TO REMOTE STATIONS. THREE SUPPORTING ANALYTIC STUDIES WERE PERFORMED. THE FIRST DEALS WITH A MEANS FOR PARTITIONING A LARGE FILE TO PERMIT, IN SOME CASES, GREATLY REDUCED SEARCHING TIMES. THE SECOND DEALS WITH A MATHEMATICAL MODEL FOR A TIME-SHARED COMPUTER SYSTEM WHICH ALLOWS FOR ANALYTICAL CALCULATION OF PROCESSING TIMES AT EACH TERMINAL AS A FUNCTION OF SYSTEM LOADING. THE THIRD INVESTIGATES THREE COMPUTATIONAL ALGORITHMS FOR PERFORMING MAN-JOB MATCH CALCULATIONS. ESTIMATES OF PROCESSING TIMES ARE GIVEN, AND THE METHODS COMPARED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-632 473 5/2 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
THE BOLD (BIBLIOGRAPHIC ON-LINE DISPLAY) SYSTEM. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER.
APR 66 27P BURNAUGH,HOWARD P. I
REPT. NO. SP-2338/000/01.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-615 718.

DESCRIPTORS: (*INFORMATION RETRIEVAL, REAL TIME), (*BIBLIOGRAPHIES, *DISPLAY SYSTEMS), CLASSIFICATION, SUBJECT INDEXING, COMPUTATIONAL LINGUISTICS, PROGRAMMING(COMPUTERS), MAGNETIC TAPE, TELETYPE SYSTEMS (U)
IDENTIFIERS: FILE STRUCTURES, TIME SHARING, ON-LINE SYSTEMS, LIGHT PENS, BOLD(BIBLIOGRAPHIC ON-LINE DISPLAY) (U)

THE BOLD (BIBLIOGRAPHIC ON-LINE DISPLAY) SYSTEM SERVES AS A GENERAL PURPOSE VEHICLE FOR RESEARCH ON THE COMPONENTS OF A REAL-TIME RETRIEVAL SYSTEM. SPECIFIC SUBJECTS FOR INVESTIGATION ARE INDEXING, CLASSIFICATION AND CATEGORIZING SCHEMES, FILE ORGANIZATION, AND USER-SYSTEM COMMUNICATION. THE PROGRAM OPERATES IN A 'TIME-SHARING' ENVIRONMENT DOING INDEPENDENT RETRIEVAL FOR MULTIPLE SIMULTANEOUS USRS. A RETRIEVAL STATION MAY BE ANY TELETYPE CONNECTED TO THE TIME-SHARING SYSTEM. A STATION MAY BE AUGMENTED WITH A CRT CONSOLE AND A LIGHT PEN FOR RAPID DISPLAYING OF THE RETRIEVAL INFORMATION. RETRIEVAL IS EFFECTED BY THE SPECIFICATION OF CATEGORIES AND/OR RETRIEVAL PHRASES, USING BOOLEAN CONNECTORS. THERE ARE TWO MODES FOR RETRIEVAL OPERATION: THE BROWSE MODE AND THE SEARCH MODE. IN THE BROWSE MODE THE USER MAY SPECIFY BROAD CATEGORIES AND RETRIEVAL TERMS AND THEN BROWSE THROUGH THE RETRIEVAL INFORMATION ENTRY BY ENTRY. THE USER DESIGNATES WHAT INFORMATION IS TO BE RETURNED. THIS MAY BE ANYTHING THAT IS DEFINED IN THE DATA BASE, AND MAY RANGE FROM A SINGLE COMPONENT (SUCH AS AUTHOR, TITLE, ETC., FOR A BIBLIOGRAPHIC DATA SET) TO A COMPLETE BODY OF TEXT (I.E., ABSTRACT). (AUTHOR) (FOR PRESENTATION AT THE THIRD ANNUAL COLLOQUIUM ON INFORMATION RETRIEVAL, UNIV. OF PENNSYLVANIA, MAY 12-13. 1966) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-633 930 9/2 5/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
SEMIANNUAL TECHNICAL SUMMARY REPORT TO THE DIRECTOR, ADVANCED RESEARCH PROJECTS AGENCY FOR THE PERIOD 18 NOVEMBER 1965 THROUGH 17 MAY 1966. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
MAY 66 54P BAUM,C. ;
REPT. NO. TM-687/006/00,
CONTRACT: AF 19(628)-5166,ARPA ORDER-773

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INFORMATION RETRIEVAL, STATE-OF-THE-ART REVIEWS), (*PROGRAMMING LANGUAGES, STATE-OF-THE-ART REVIEWS), (*DATA PROCESSING SYSTEMS, COMPUTERS), (*COMPUTERS, SCHEDULING), SYNTAX, PROGRAMMING(COMPUTERS), COMPILERS, SYSTEMS ENGINEERING, COMMAND + CONTROL SYSTEMS (U)
IDENTIFIERS: LUCID, TIEL, LISP, TIME SHARING(COMPUTERS) (U)

THIS REPORT DESCRIBES WORK DONE IN THE ARPA-SPONSORED INFORMATION PROCESSING TECHNIQUES AND COMMAND AND CONTROL RESEARCH AND LABORATORY PROGRAM FROM 18 NOVEMBER 1965 THROUGH 17 MAY 1966. PROJECTS COVERED ARE TIME-SHARING, DATA BASE SYSTEMS, COMPUTER PROCESSING OF NATURAL LANGUAGE, AND THE RESEARCH AND TECHNOLOGY LABORATORY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-639 325 9/2 5/1 12/2
CARNEGIE INST OF TECH PITTSBURGH PA GRADUATE SCHOOL OF INDUSTRIAL ADMINISTRATION
AN EVALUATION OF COMMERCIAL TIME SHARING SYSTEMS. (U)
DESCRIPTIVE NOTE: MANAGEMENT SCIENCES RESEARCH REPT.,
66 60P GOLD, M. M. (STEDRY, A. C. (
REPT. NO. MSRR-71,
CONTRACT: NONR-760(24),
PROJ: NR-047-048,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ALSO UNDER CONTRACT NONR-4102(01) PROJ. MAC AT M.I.T.

DESCRIPTORS: (*COMPUTERS, *OPERATIONS RESEARCH), (*MANAGEMENT ENGINEERING, COMPUTERS), DATA PROCESSING SYSTEMS, COMMERCE (U)
IDENTIFIERS: TIME SHARING(COMPUTERS),MULTIPLE ACCESS SYSTEM (U)

THE DESIGN OF COMPUTERS AND SYSTEMS WHICH AFFORD SIMULTANEOUS MULTIPLE-USER ACCESS HAS BEEN A SUBJECT OF INDUSTRIAL AND ACADEMIC RESEARCH FOR SEVERAL YEARS. INSTALLATION OF SEVERAL 'TIME-SHARED' COMPUTER SYSTEMS HAS PROCEEDED WITH ADDITIONAL RESEARCH AND DEVELOPMENT DEVOTED TO THEIR IMPROVEMENT. THE MAJOR EFFORT EVIDENCED, HOWEVER, HAS BEEN DIRECTED TO THE DEVELOPMENT OF THESE FACILITIES AS SYSTEMS WITH ONLY SECONDARY ATTENTION PAID TO THE REQUIREMENTS OF THE POTENTIAL USERS AND ALMOST NONE TO MANAGEMENT USERS -- THE SUBJECT OF INTEREST HERE. IN THIS PAPER WE WILL ATTEMPT TO EVALUATE CERTAIN ASPECTS OF TIME-SHARED SYSTEMS USING THE REQUIREMENTS OF THE POTENTIAL MANAGERIAL USER AS UNITS OF ANALYSIS. POSSIBLE APPLICATIONS OF TIME-SHARING ARE DISCUSSED. DESCRIPTION OF USAGE IN EXTANT SYSTEMS IS INCLUDED WHERE APPLICABLE BUT THE FAR-MORE-VAST POTENTIAL USES CONSTITUTE THE PRIME FOCUS. IN ADDITION, TWO COMMERCIAL TIME-SHARING SERVICES AVAILABLE TO MANY COMPANIES ARE DESCRIBED IN DETAIL AS POSSIBLE PREDECESSORS OF ENVISIONED GIGANTIC CENTRALIZED COMPUTER SYSTEMS WHOSE ECONOMIES OF SCALE AND ELIMINATION OF REDUNTANT DATA STORAGE MAKE THEIR USE BY EVEN THE LARGEST OF COMPANIES ADVANTAGEOUS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-635 215 9/2 12/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARING OPERATIONS AND MANAGEMENT. (U)
MAR 66 20P FIALA, F. T. I
REPT. NO. SP-2417,
CONTRACT: AF 19(628)-5146,ARPA ORDER-773

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE DATA PROCESSING MANAGEMENT ASSOCIATION CONFERENCE, CHICAGO, ILL., 20-24 JUN 66.

DESCRIPTORS: (*OPERATIONS RESEARCH, *DIGITAL COMPUTERS), (*MANAGEMENT ENGINEERING, DIGITAL COMPUTERS), COMPUTER OPERATORS, SCHEDULING (U)
IDENTIFIERS: TIME SHARING(COMPUTERS), AN/FSQ-32 (U)

THIS PAPER DESCRIBES THE OPERATION OF THE TIME-SHARING SYSTEM NOW IN USE IN THE RESEARCH AND TECHNOLOGY LABORATORY OF THE SYSTEM DEVELOPMENT CORPORATION. THE SCOPE OF THE PAPER COVERS THE OPERATOR'S DUTIES, PLANT LAYOUT, AND CONSIDERATIONS THAT OPERATIONS MANAGERS SHOULD BE GIVING TO PRESENT AND INHERENT PROBLEMS POSED BY THE NEW METHODS OF COMPUTER OPERATIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-635 966 9/2 13/6
MASSACHUSETTS INST OF TECH CAMBRIDGE
TRAFFIC CONTROL IN A MULTIPLEXED COMPUTER
SYSTEM. (U)
DESCRIPTIVE NOTE: DOCTORAL THESIS.
JUN 66 87P SALTZER, JEROME HOWARD !
REPT. NO. MAC-TR-30.
CONTRACT: NONR-4102(01),
PROJ: NR-048-189.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE! REPT. ON PROJ. MAC.

DESCRIPTORS: (*TRAFFIC, CONTROL), (*COMPUTERS, TRAFFIC), SCHEDULING, MULTIPLE OPERATION (U)
IDENTIFIERS: MAC PROJECT (U)

THE THESIS DESCRIBES A SCHEME FOR PROCESSOR MULTIPLEXING IN A MULTIPLE USER, MULTIPLE PROCESSOR COMPUTER SYSTEM. THE SCHEME IS BASED UPON A DISTRIBUTED SUPERVISOR WHICH MAY BE DIFFERENT FOR DIFFERENT USERS. THE PROCESSOR MULTIPLEXING METHOD PROVIDES SMOOTH INTER-PROCESS COMMUNICATION, TREATMENT OF INPUT/OUTPUT CONTROL AS A SPECIAL CASE OF INTER-PROCESS COMMUNICATION, AND PROVISION FOR A USER TO SPECIFY PARALLEL PROCESSING OR SIMULTANEOUS INPUT/OUTPUT WITHOUT INTERRUPT LOGIC. BY TREATMENT OF PROCESSORS IN AN ANONYMOUS POOL, SMOOTH AND AUTOMATIC SCALING OF SYSTEM CAPACITY IS OBTAINED AS MORE PROCESSORS AND MORE USERS ARE ADDED. THE BASIC DESIGN HAS INTRINSIC OVERHEAD IN PROCESSOR TIME AND MEMORY SPACE WHICH REMAINS PROPORTIONAL TO THE AMOUNT OF USEFUL WORK THE SYSTEM DOES UNDER EXTREMES OF SYSTEM SCALING AND LOADING. THE DESIGN IS NOT LIMITED TO A SPECIFIC HARDWARE IMPLEMENTATION! IT IS INTENDED TO H: E WIDE APPLICATION TO MULTIPLEXED, MULTIPLE PROCESSOR COMPUTER SYSTEMS. THE PROCESSOR TRAFFIC CONTROLLER DESCRIBED HERE IS AN INTEGRAL PART OF MULTICS, A MULTIPLEXED INFORMATION AND COMPUTING SERVICE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00394

AD-636 839 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
JOB DESCRIPTIONS AND SCHEDULING IN THE SDC Q-32 TIME-SHARING SYSTEM. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.
JUN 66 31P MCISAAC,PAUL V. I
REPT. NO. TM-2996.
CONTRACT: AF 19(628)-5166,ARPA ORDER-773

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*OPERATIONS RESEARCH, *DIGITAL COMPUTERS), SCHEDULING, ALGORITHMS, OPTIMIZATION (U)
IDENTIFIERS: TIME SHARING(COMPUTERS) (U)

THIS PAPER DESCRIBES THE CURRENT SDC Q-32 TIME-SHARING SYSTEM SCHEDULING ALGORITHM, PRESENTS SOME SIMULATION RESULTS AND OBSERVATIONS WHICH LED TO ITS DESIGN AND IMPLEMENTATION, AND EVALUATES THE ALGORITHM ON THE BASIS OF EMPIRICAL SYSTEM DATA. GENERAL OBSERVATIONS ON SCHEDULING ARE ALSO PRESENTED IN ORDER TO PROVIDE INSIGHT INTO THE PROBLEM AND TO ASSIST SYSTEM DESIGNERS IN THE DEVELOPMENT OF OPTIMAL SCHEDULING ALGORITHMS FOR FUTURE TIME-SHARED SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-636 961 17/2
RAND CORP SANTA MONICA CALIF
THE IMPACT OF THE NEW TECHNOLOGY ON COMMAND SYSTEM DESIGN. (U)
JUL 66 11P WESSEL, ANDREW E. I
REPT. NO. P-3409,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE CONGRESS ON INFORMATION SYSTEM SCIENCE AND TECHNOLOGY (3RD), BUCK HILL FALLS, PENNSYLVANIA, NOVEMBER 1966.

DESCRIPTORS: (*COMMAND + CONTROL SYSTEMS, STATE-OF-THE-ART REVIEWS), REAL TIME, DATA PROCESSING SYSTEMS, PROGRAMMING(COMPUTERS), MANAGEMENT PLANNING, SYSTEMS ENGINEERING (U)

A FEW YEARS AGO S. H. GENENSKY AND AUTHOR WROTE A PAPER TITLED, SOME THOUGHTS ON DEVELOPING FUTURE COMMAND AND CONTROL SYSTEMS. IN BRIEF, THE PAPER ARGUED FOR A VERSION OF AN 'ON-SITE' DEVELOPMENT AND DESIGN PHILOSOPHY SUPPORTED BY A MILITARY SERVICE CENTER WHICH WOULD PROVIDE THE APPROPRIATE SPECIALISTS ON LOAN TO THE GIVEN USER COMMAND. THIS PAPER RAISES SOME QUESTIONS AS TO WHETHER THE NEWER CAPABILITIES FOR 'ON-LINE' INTERACTIONS BETWEEN USERS AND AUTOMATED SYSTEMS HAVE OUTMODED THE PREVIOUS THINKING ON THE SUBJECT OF COMMAND SYSTEM DESIGN. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-636 993 9/2 5/8
RAND CORP SANTA MONICA CALIF
JOSS: INTRODUCTION TO A HELPFUL ASSISTANT. (U)
JUL 66 50P BAKER: C. L. I
REPT. NO. RM-5058-PR,
CONTRACT: AF 49(638)-1700,

UNCLASSIFIED REPORT
AVAILABILITY: RAND CORP. 1700 MAIN ST., SANTA MONICA, CALIF. $2.00.
SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTERS, *MAN-MACHINE SYSTEMS), REAL TIME, DIGITAL COMPUTERS, SPECIAL PURPOSE COMPUTERS, REMOTE CONTROL SYSTEMS, SYSTEMS ENGINEERING (U)
IDENTIFIERS: JOSS(JOHNNIAC OPEN SHOP SYSTEM) (U)

A STEP-BY-STEP DEMONSTRATION OF JOSS--A SYSTEM DESIGNED TO PROVIDE THE INDIVIDUAL SCIENTIST AND ENGINEER WITH A PERSONAL COMPUTATIONAL SERVICE IMMEDIATELY AVAILABLE, WHENEVER REQUIRED, IN HIS OWN WORKING ENVIRONMENT. THE DISTINGUISHING FEATURES OF JOSS ARE: MOBILE CONSOLES EQUIPPED WITH ELECTRIC TYPEWRITERS FOR INPUT AND OUTPUT; HIGHLY READABLE AND POWERFUL LANGUAGE FOR NUMERIC COMPUTATION; ENGLISH CAPITALIZATION, SPELLING, AND PUNCTUATION RULES; EASY EDITING; QUICK RESPONSE; EXACT INPUT; FAMILIAR DECIMAL ARITHMETIC; EXACT OUTPUT; AND REPORT-QUALITY FORMATTED OUTPUT. THE INTIMATE INTERACTION BETWEEN MAN AND MACHINE PERMITS THE JOSS USER TO EXERCISE JUDGMENT CONTINUALLY DURING THE COURSE OF COMPUTATION, CHANGING AND MODIFYING THE PROCEDURE AS HE WISHES. THIS IS ONE OF THE UNIQUE ASPECTS THAT DISTINGUISHES JOSS FROM OTHER SYSTEMS AND HAS LED TO ITS ENTHUSIASTIC ADOPTION BY THE RAND STAFF. THIS TALK WAS PRESENTED TO THE ELEVENTH ANNUAL DATA PROCESSING CONFERENCE AT THE UNIVERSITY OF ALABAMA BIRMINGHAM CENTER ON 4 MAY 1966. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-637 192 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE
MODELS AND DATA STRUCTURES FOR DIGITAL LOGIC SIMULATION. (U)
DESCRIPTIVE NOTE: MASTER'S THESIS.
JUN 66 148P SMITH,DONALD LEIGH
REPT. NO. MAC-TR-31,
CONTRACT: NONR-4102(01),
PROJ: NR-048-189,RR-003-09-01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTER LOGIC, *MODELS(SIMULATIONS)), DIGITAL COMPUTERS, COMBINATORIAL ANALYSIS, ALGORITHMS, DATA PROCESSING SYSTEMS (U)
IDENTIFIERS: TIME SHARING(COMPUTERS), THESES (U)

A DIGITAL LOGIC SIMULATION SYSTEM IS PROPOSED FOR DESIGN VERIFICATION. LOGIC TO BE SIMULATED IS SPECIFIED WITH A HIGH-LEVEL REGISTER TRANSFER DESIGN LANGUAGE, AND THE SIMULATION SYSTEM OPERATES ON-LINE ON A LARGE TIME-SHARED COMPUTER. THE PROBLEM OF SELECTING ADEQUATE CIRCUIT AND SIGNAL MODELS FOR THIS PURPOSE IS CONSIDERED. MODELS ARE PROPOSED WITH SUFFICIENT TIMING DETAIL TO ALLOW THE SIMULATION SYSTEM TO DETECT TIMING ERRORS WHICH CURRENTLY ARE FOUND BY MANUAL CHECKING OR PROTOTYPE DEBUGGING. A DATA STRUCTURE FOR REPRESENTING IDEALIZED CIRCUIT AND SIGNAL MODELS AND A MATCHING SIMULATION ALGORITHM IS DISCUSSED. THE DATA STRUCTURE IS A DIRECT REPRESENTATION OF A COMPLETE SUBSET OF THE DESIGN LANGUAGE AND IS ORGANIZED SO THAT IT CAN BE INCREMENTALLY MODIFIED TO REFLECT DESIGN CHANGES. THE SIMULATION ALGORITHM IS VERY EFFICIENT BECAUSE COMBINATIONAL LEVELS ARE RE-EVALUATED ONLY IF THEIR VALUES ARE NEEDED AND MAY HAVE CHANGED SINCE LAST EVALUATED. THE DATA STRUCTURE IS EXPANDED TO REPRESENT DETAILED CIRCUIT AND SIGNAL MODELS. A METHOD OF INTERMIXING IDEALIZED AND DETAILED MODELS AND EFFICIENTLY SIMULATING VERY LARGE DESIGNS IS DISCUSSED. EXTENSIONS ARE PROPOSED TO THE DESIGN LANGUAGE SO THAT IT CAN BE USED TO SPECIFY MODEL PARAMETERS AND SERVE AS THE SIMULATION COMMAND LANGUAGE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-637 216 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE
INPUT/OUTPUT IN TIME-SHARED, SEGMENTED,
MULTIPROCESSOR SYSTEMS. (U)
DESCRIPTIVE NOTE: MASTER'S THESIS.
FEB 66 75P SMITH,ARTHUR ANSHEL
REPT. NO. MAC-TR-28,
CONTRACT: NONR-4102(01),
PROJ: NR-048-189,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC.

DESCRIPTORS: (*INPUT-OUTPUT DEVICES, *SPECIAL PURPOSE COMPUTERS), OPERATIONS RESEARCH, DIGITAL COMPUTERS, MULTIPLE OPERATION (U)
IDENTIFIERS: TIME SHARING(COMPUTERS), THESES (U)

AFTER INTRODUCING AND DEFINING THE CONCEPTS OF TIME-SHARING, SEGMENTATION, AND MULTIPROCESSING, TWO CLASSES OF SYSTEMS INCORPORATING THESE ARE INTRODUCED. BOTH CLASSES USE ASSOCIATIVE MEMORIES, AS 'LOOK BEHIND' DEVICES TO SPEED THE OPERATION OF ADDRESSING THE SEGMENTED MEMORY, WITH THE DISTINCTION BETWEEN CLASSES BEING THE LOCATION OF THE ASSOCIATIVE MEMORY. IN ONE CLASS, THERE IS ONE ASSOCIATIVE MEMORY FOR EACH PROCESSING ELEMENT, NO MATTER HOW MANY MAIN MEMORY UNITS ARE CONNECTED TO A PROCESSOR; IN THE SECOND CLASS, THERE IS ONE ASSOCIATIVE MEMORY FOR EACH MAIN MEMORY UNIT, WITH THE PROCESSORS SHARING THE ASSOCIATIVE MEMORY. AFTER INTRODUCING TWO CRITERIA FOR INPUT/OUTPUT SYSTEMS, THAT THE OVERHEAD ASSOCIATED WITH THEIR USE BE SMALL AND THAT THEY MAY BE PHYSICALLY AND LOGICALLY SIMPLE, AND DESCRIBING FURTHER OPERATIONS OF THE SYSTEMS, IT IS CONCLUDED THAT MEMBERS OF THE SECOND CLASS, HAVING SHARED ASSOCIATIVE MEMORIES, BEST MEET THESE CRITERIA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-640 647 5/8 5/2 5/7 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
ON-LINE INTERACTIVE DISPLAYS IN APPLICATION TO
LINGUISTIC ANALYSIS AND INFORMATION PROCESSING AND
RETRIEVAL. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
SEP 66 22P SIMMONS,R. F. ;
REPT. NO. SP-2432/001/00,
CONTRACT: AF 19(628)-5166,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE
SYMPOSIUM ON MAN/MACHINES INTERACTION, PARIS
(FRANCE), 10-17 OCT 66. SEE ALSO AD-615 718,
AD-632 473.

DESCRIPTORS: (*MAN-MACHINE SYSTEMS, DISPLAY
SYSTEMS), INFORMATION RETRIEVAL, COMPUTATIONAL
LINGUISTICS, REPORTS, BIBLIOGRAPHIES (U)
IDENTIFIERS: ON-LINE SYSTEMS,
KERNELIZATION(SENTENCES), BOLD,SENTENCES (U)

AS COMPUTERS ARE USED FOR INCREASINGLY COMPLEX
OPERATIONS SUCH AS RETRIEVING DOCUMENTS AND ANALYZING
SENTENCES, IT BECOMES APPARENT THAT HUMAN DECISION-
MAKING IS STILL AN ESSENTIAL ELEMENT OF THE PROCESS.
THE USE OF THE ON-LINE INTERACTIVE CAPABILITY OF
TODAY'S THIRD-GENERATION COMPUTERS SUPPORTED BY
TYPEWRITER AND DISPLAY SCOPE TERMINALS MAKES THE
CONSTRUCTION OF COMPUTER-AIDED SYSTEMS FOR THESE
COMPLEX TASKS AN ATTRACTIVE APPROACH. TWO SUCH
SYSTEMS ARE DESCRIBED IN THE PAPER. ONE IS BOLD,
A DOCUMENT RETRIEVAL SYSTEM THAT OFFERS THE USER AN
ON-LINE BROWSING CAPABILITY AS WELL AS THE ABILITY TO
RETRIEVE DOCUMENTS OR CONSTRUCT BIBLIOGRAPHIES USING
COMPUTER-DRIVEN DISPLAY SCOPES AND TYPEWRITERS.
THE OTHER IS A SENTENCE-ANALYSIS SYSTEM THAT
COMPUTES DEPENDENCY ANALYSES, PHRASE STRUCTURE
ANALYSES AND KERNEL SETS FOR EACH SENTENCE IT IS
GIVEN. THIS SYSTEM PRODUCES AND DISPLAYS MULTIPLE
ANALYSES AND ALLOWS THE USER TO CORRECT THEM OR TO
SELECT THOSE WHICH ARE SATISFACTORY. THE CONCLUSION
IS THAT FOR SOME TIME TO COME COMPLEX INFORMATION
PROCESSING SYSTEMS--PARTICULARLY THOSE CONCERNED WITH
NATURAL LANGUAGES--WILL REMAIN AT THE LEVEL OF
SEMIAUTOMATIC COMPUTER AIDS TO HUMAN INFORMATION
PROCESSING. AS SUCH, THEIR USEFULNESS CAN BE
MAXIMIZED BY OPTIMAL USE OF INTERACTIVE DISPLAY
TECHNOLOGY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-640 652 5/8 5/2 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
UTILIZATION OF ON-LINE INTERACTIVE DISPLAYS. (U)
DESCRIPTIVE NOTE; PROFESSIONAL PAPER,
AUG 66 35P BORKO,H. I
REPT. NO. SP-2575,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE; PREPARED FOR PRESENTATION AT THE CONGRESS ON INFORMATION SYSTEM SCIENCE AND TECHNOLOGY (3RD), BUCKNELL FALLS, PENNSYLVANIA, NOVEMBER 20-23 1966.

DESCRIPTORS: (*MAN-MACHINE SYSTEMS, DISPLAY SYSTEMS), (*INFORMATION RETRIEVAL, MAN-MACHINE SYSTEMS), PROGRAMMING(COMPUTERS), PROBLEM SOLVING, DECISION MAKING, DATA PROCESSING SYSTEMS, SYNTAX, TELETYPE SYSTEMS, CATHODE RAY TUBES, COMPUTERS (U)

THE VERSATILITY AND ADVANTAGES OF USING ON-LINE INTERACTIVE DISPLAYS ARE ILLUSTRATED BY EXAMPLES FROM (1) THE GENERAL PURPOSE DISPLAY SYSTEM (GPDS), (2) THE PATTERN LEARNING PARSER (PLP II), AND (3) THE BIBLIOGRAPHIC ON-LINE DISPLAY SYSTEM (BOLD). ALTHOUGH THESE SYSTEMS ARE DESIGNED FOR DIFFERENT PURPOSES THEY ALL UTILIZE DISPLAYS AS COMMUNICATION CHANNELS BY WHICH THE MAN AND THE MACHINE ARE ABLE TO ENGAGE IN A DIALOG AND WORK TOGETHER TO SOLVE PROBLEMS. THE COMPUTER PROCESSES DATA RAPIDLY AND DISPLAYS THE RESULTS. THE INFORMATION PROVIDED IN THE DISPLAYS ENABLES THE USER TO STEER AND CONTROL THE STEP-BY-STEP PROGRESS OF THE PROGRAM. NOT ONLY ARE PROBLEMS SOLVED MORE EFFICIENTLY, BUT THE USERS ARE MORE SATISFIED BY THE RESULTS ACHIEVED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-642 255 9/2 5/2
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF
ELECTRICAL ENGINEERING
THE PDP-5 AS A SATELLITE PROCESSOR, (U)
MAY 66 15P WEINBERG,PAUL R. ;
WOLFBERG,MICHAEL S. ;
CONTRACT: NONR-551(40)

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN DECUS PROCEEDINGS PS1-64
MAY 1966.

DESCRIPTORS: (*DATA PROCESSING SYSTEMS,
*INFORMATION RETRIEVAL), REAL TIME, MULTIPLE
OPERATION, REMOTE CONTROL SYSTEMS, INPUT-OUTPUT
DEVICES, COMPUTERS (U)
IDENTIFIERS: PDP-5, IBM 7040 (U)

A PDP-5 AT THE UNIVERSITY OF PENNSYLVANIA IS
ATTACHED TO AN IBM 7040 THROUGH A HIGH SPEED DATA
CHANNEL. IN THIS CONFIGURATION IT SERVES AS AN
INTERMEDIARY BETWEEN THE 7040 AND SEVERAL REMOTE
CONSOLES INCLUDING CHARACTER DISPLAYS AND
TELETYPES. THE PURPOSE IS TO PROVIDE REAL-TIME
INFORMATION RETRIEVAL SYSTEMS WITH A REMOTE CONSOLE
CAPABILITY. THIS PAPER CONSISTS OF TWO PARTS:
THE FIRST SECTION DESCRIBED THE INTERACTION AMONG
THE VARIOUS SUBSYSTEMS, AND THE SECOND SECTION
PRESENTS AN ACCOUNT OF THE ASSEMBLY OF PDP-5
PROGRAMS ON THE 7040. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-643 313 9/2 12/1
COMPUTER RESEARCH CORP NEWTON MASS
MAGIC PAPER - AN ON-LINE SYSTEM FOR THE MANIPULATION OF SYMBOLIC MATHEMATICS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
APR 66 67P CLAPP,LEWIS C. (JORDAN,DALE E. (WAX,ELLEN J. (WOLF,ROBERT S. (
REPT. NO. R-105-1
CONTRACT: AF 19(628)-5098
PROJ: J-105

UNCLASSIFIED REPORT

DESCRIPTORS: (*MATHEMATICS, *DATA PROCESSING SYSTEMS), EQUATIONS, ALGEBRA, OPERATION (U)
IDENTIFIERS: ON-LINE SYSTEMS, MAGIC PAPER SYSTEM, SYMBOLIC MATHEMATICS, LIGHT PENS, *DISPLAY SYSTEMS (U)

THE REPORT DESCRIBES THE PRELIMINARY VERSION OF THE MAGIC PAPER SYSTEM. THROUGH A CONVERSATIONAL INTERACTION, THE SYSTEM AIDS THE SCIENTIST, ENGINEER OR MATHEMATICIAN AS HE PERFORMS SYMBOLIC OPERATIONS ON LINEAR ALGEBRAIC EQUATIONS. THE USER BEGINS BY ENTERING HIS INITIAL EQUATIONS AND CONDITIONS THROUGH A MATHEMATICAL KEYBOARD. AS HE TYPES THESE EQUATIONS, THEY ARE DISPLAYED ON A FLICKER-FREE SCOPE IN STANDARD MATHEMATICAL NOTATION. USING A PUSH-BUTTON CONTROL PANEL AND A LIGHT PEN, HE MAY SELECT EXPRESSIONS AND OPERATIONS WHICH ARE TO BE PERFORMED ON THEM. IF THE OPERATION IS LEGAL, THE SYSTEM GENERATES A NEW EQUATION WHICH IS THEN ADDED TO THE SCOPE DISPLAY. WITH THE BASIC SET OF OPERATIONS, THE USER MAY CREATE NEW OPERATORS WHICH CAN THEN BE ADDED TO THE SYSTEM. HE CAN ALSO INTRODUCE SPECIAL NOTATIONAL CONVENTIONS. THE USER HAS CONSIDERABLE CONTROL WHICH ENABLES HIM TO PERSONALIZE THE SYSTEM TO MEET HIS OWN PARTICULAR NEEDS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-644 339 9/2
RAND CORP SANTA MONICA CALIF
JOSS: INTRODUCTION TO THE SYSTEM IMPLEMENTATION, (U)
NOV 66 21P BRYAN,G. E. I
REPT. NO. P-3486

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE FALL SYMPOSIUM OF DIGITAL EQUIPMENT COMPUTER USERS SOCIETY (DECUS), LAWRENCE RADIATION LABORATORY, BERKELEY, CALIFORNIA, NOVEMBER 4 AND 5, 1966.

DESCRIPTORS: (*DIGITAL COMPUTERS, *TIME SHARING), OPERATION, PROBLEM SOLVING (U)
IDENTIFIERS: JOSS (U)

JOSS IS A TIME-SHARED COMPUTER SYSTEM THAT PROVIDES FOR THE SOLUTION OF NUMERICAL PROBLEMS VIA AN EASILY LEARNED LANGUAGE AT REMOTE TYPEWRITER CONSOLES. THE PDP-6 HARDWARE USED TO IMPLEMENT JOSS CONSISTS OF 32,000 WORDS OF 1.75M SEC CORE MEMORY, A 1-MILLION-WORD 4M SEC DRUM, A 6-MILLION-WORD DISCFILE, AND VARIOUS PERIPHERAL DEVICES. A SPECIAL DATA RELOCATION MODE FOR MEMORY REFERENCES HAS BEEN ADDED TO FACILITATE INTERPRETATION OF JOSS PROGRAMS. THE JOSS CONSOLES, BUILT AROUND A SELECTRIC I/O TYPEWRITER, WERE SPECIALLY MANUFACTURED TO RAND SPECIFICATIONS. FEATURES INCLUDE FULL DUPLEX SIGNALING, LINE PARITY CHECKING, A PAGE EJECT MECHANISM, AND SEVERAL BUTTONS AND LIGHTS TO CONTROL AND REPORT CONSOLE STATUS. THE STAND-ALONE JOSS SOFTWARE CONSISTS OF THE JOSS LANGUAGE INTERPRETER AND ITS ARITHMETIC SUBROUTINES, A MONITOR FOR USER SCHEDULING AND RESOURCE ALLOCATION, AND I/O ROUTINES FOR THE DISC, DRUM, CONSOLES, AND OTHER PERIPHERAL DEVICES. JOSS SERVICE IS CURRENTLY AVAILABLE TO NEARLY 500 USERS THROUGH 34 CONSOLES, SIX OF WHICH ARE REMOTE TO RAND OPERATING OVER BOTH PRIVATE AND DATAPHONE LINES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-645 294 9/2 12/2 5/1
CARNEGIE INST OF TECH PITTSBURG PA COMPUTATION CENTER
COMPUTER SCIENCE RESEARCH REVIEW. (U)
DESCRIPTIVE NOTE: ANNUAL REPT.,
66 73P NISSENSON,JOYCE I
CONTRACT: SD-146
MONITOR: AFOSR 67-0252

UNCLASSIFIED REPORT

DESCRIPTORS: (DATA PROCESSING SYSTEMS, REVIEWS), MANAGEMENT ENGINEERING, GAME THEORY, SIMULATION, ALGORITHMS, TIME SHARING, COMPUTERS, DESIGN, PROBLEM SOLVING (U)
IDENTIFIERS: COMPUTATION SCIENCE, COMPUTATION CENTERS (U)

CONTENTS: INTRODUCTION; MANAGING A COMPUTATION CENTER BY DAVID H. NICKERSON, DIRECTOR; ON THE REPRESENTATIONS OF PROBLEMS BY DR. ALLEN NEWELL; THE SYNTHESIS OF ALGORITHMIC SYSTEMS BY DR. ALAN J. PERLIS, HEAD DEPARTMENT OF COMPUTER SCIENCE; REFLECTIONS ON TIME SHARING FROM A USER'S POINT OF VIEW BY DR. HERBERT SIMON, R. K. MELLON PROFESSOR OF COMPUTER SCIENCES AND PSYCHOLOGY; GENERALITY IN COMPUTER DESIGN BY JESSE T. QUATSE, MANAGER, ENGINEERING DEVELOPMENT; LISTING OF FACULTY; LISTING OF GRADUATE STUDENTS; LISTING OF STAFF ADMINISTRATORS; LISTING OF PUBLICATIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-647 196 5/2 9/2
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF ELECTRICAL ENGINEERING
DESIGN PRINCIPLES FOR AN ON-LINE INFORMATION RETRIEVAL SYSTEM. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
DEC 66 136P LOWE,THOMAS C. I
REPT. NO. 67-14
CONTRACT: AF 49(638)-1421, DA-31-124-ARO(D)-362
PROJ: AF-9769
TASK: 976901
MONITOR: AFOSR 67-0423

UNCLASSIFIED REPORT

DESCRIPTORS: (*INFORMATION RETRIEVAL; DESIGN), DECODING, COMPUTER STORAGE DEVICES, REAL TIME, DATA, MAN-MACHINE SYSTEMS, DATA STORAGE SYSTEMS, COMPUTER OPERATORS, TYPEWRITERS (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

AREAS INVESTIGATED INCLUDE SLOW MEMORY DATA STORAGE, THE PROBLEM OF DECODING FROM AN INDEX TO A SLOW MEMORY ADDRESS, THE STRUCTURE OF DATA LISTS AND DATA LIST OPERATORS, COMMUNICATIONS BETWEEN THE HUMAN USER AND THE SYSTEM, PROCESSING OF RETRIEVAL REQUESTS, AND THE USER'S CONTROL OVER THE RETURN OF INFORMATION RETRIEVED. LINEAR, LINKED AND INVERTED FILE STRUCTURES ARE CONSIDERED. EMPIRICAL DATA FROM THE REPOSITORY OF THE ASSOCIATION FOR COMPUTING MACHINERY ARE USED FOR ILLUSTRATIVE PURPOSES. THESE DATA ARE ALSO USED IN THE PORTION OF THE DECODING MECHANISM STUDY WHICH DEALS WITH THE EFFECTS OF TRUNCATION OF INDEX TERMS. FOLLOWING THE FILE ORGANIZATION STUDY, THE NECESSARY LIST STRUCTURES AND LIST OPERATORS ARE DESIGNED. AN EDITING LANGUAGE FOR USE BY THE HUMAN OPERATOR IN COMMUNICATING WITH THE SYSTEM IS SPECIFIED, AS ARE REQUIREMENTS FOR THE EXECUTION OF 'BACKGROUND' PROGRAMS WHEN A USER'S INFORMATION RETRIEVAL REQUEST IS NOT BEING PROCESSED. FINALLY, A SIMPLE SEQUENCE OF MAN-MACHINE COMMUNICATIONS WHICH ALLOW THE USER OF THE SYSTEM TO SPECIFY WHAT CLASSES OF DATA ARE TO BE RETURNED TO HIM IS OUTLINED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-649 147 9/2 12/1
CALIFORNIA UNIV LOS ANGELES DEPT OF ENGINEERING
THEORY OF QUEUES APPLIED TO TIME-SHARED COMPUTER
SYSTEMS. (U)
66 12P KLEINROCK,LEONARD I
CONTRACT: AF-AFOSR-700-66
PROJ: AF-9749
TASK: 9749D1
MONITOR: AFOSR 67-0735

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN IEEE REGION SIX
CONFERENCE RECORD 1966.

DESCRIPTORS: (*TIME SHARING, *QUEUEING THEORY),
(*COMPUTERS, TIME SHARING), DATA PROCESSING
SYSTEMS, STOCHASTIC PROCESSES, MATHEMATICAL
MODELS, PROBABILITY, THEOREMS (U)

TIME-SHARED COMPUTER (OR PROCESSING) FACILITIES
ARE TREATED AS STOCHASTIC QUEUEING SYSTEMS UNDER
PRIORITY SERVICE DISCIPLINES AND THE PERFORMANCE
MEASURE OF THESE SYSTEMS IS TAKEN TO BE THE AVERAGE
TIME SPENT IN THE SYSTEM. RESULTS ARE PRESENTED
FOR MODELS IN WHICH TIME-SHARED COMPUTER USAGE IS
OBTAINED BY GIVING EACH REQUEST A FIXED QUANTUM, Q,
OF TIME ON THE PROCESSOR, AFTER WHICH THE REQUEST IS
PLACED AT THE END OF A QUEUE OF OTHER REQUESTS; THE
QUEUE OF REQUESTS IS CONSTANTLY CYCLED, GIVING EACH
USER Q SEC ON THE MACHINE PER CYCLE. RESULTS FOR
THE CASE FOR WHICH Q APPROACHES LIMIT OF 0 (A
PROCESSOR-SHARED MODEL) ARE THEN PRESENTED. A
GENERAL TIME-SHARED FACILITY IS THEN CONSIDERED IN
WHICH PRIORITY GROUPS ARE INTRODUCED.
SPECIFICALLY, THE P(TH) PRIORITY GROUP IS GIVEN
Q SUB P Q SECONDS IN THE PROCESSOR EACH TIME
AROUND. LETTING Q APPROACH LIMIT OF 0 WE THEN
GET RESULTS FOR PRIORITY PROCESSOR-SHARED SYSTEM.
THESE DISCIPLINES ARE COMPARED TO THE FIRST COME
FIRST SERVED DISCIPLINES. THE SYSTEMS CONSIDERED
PROVIDE THE TWO BASIC FEATURES DESIRED IN ANY TIME-
SHARED SYSTEM, NAMELY, RAPID SERVICE FOR SHORT JOBS,
AND THE VIRTUAL APPEARANCE OF A (FRACTIONAL
CAPACITY) PROCESSOR AVAILABLE ON A FULL-TIME BASIS.
NO CHARGE IS MADE FOR SWAP TIME, THUS PROVIDING
RESULTS FOR 'IDEAL' SYSTEMS. THE RESULTS HOLD ONLY
FOR POISSON ARRIVALS AND GEOMETRIC (OR
EXPONENTIAL) SERVICE TIME DISTRIBUTIONS.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-650 500 6/4 9/2
RAND CORP SANTA MONICA CALIF
ON-LINE COMPUTER CLASSIFICATION OF HANDPRINTED
CHINESE CHARACTERS AS A TRANSLATION AID. (U)
APR 67 20P GRONER,G. F. THEAPNER,J.
F. TROBINSON,T. W. T
REPT. NO. P-3566

UNCLASSIFIED REPORT

DESCRIPTORS: (*CHARACTER RECOGNITION, *CHINESE
LANGUAGE), COMPUTERS, COMPUTER PROGRAMS,
PRINTING, CLASSIFICATION, CATHODE RAY TUBES,
PATTERN RECOGNITION, FEASIBILITY STUDIES, INPUT-
OUTPUT DEVICES (U)
IDENTIFIERS: ON-LINE SYSTEMS, WRITING (U)

IT IS USUALLY A LONG AND ARDUOUS TASK TO FIND
CHINESE CHARACTERS IN A DICTIONARY BECAUSE THE
CHARACTERS HAVE NO NATURAL ORDERING. IN ORDER TO
DEMONSTRATE THE FEASIBILITY OF AUTOMATING THIS
PROCEDURE, A COMPUTER PROGRAM WAS DEVELOPED FOR
CATALOGING AND RETRIEVING RELATED GROUPS OF CHINESE
CHARACTERS. THE PROGRAM IS WRITTEN IN IBM 360
ASSEMBLY LANGUAGE AND RUNS ON AN IBM 360/
MODEL 40. IT MAKES USE OF MUCH OF THE SOFTWARE
AND TECHNIQUES DEVELOPED FOR THE GRAIL PROJECT.
THE INPUT DEVICE IS A TABLET; THE OUTPUT DEVICE IS
A HIGH-PERFORMANCE CATHODE RAY TUBE (CRT) DISPLAY.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-650 847 9/2
RAND CORP SANTA MONICA CALIF
SYSTEM IMPLICATIONS OF INFORMATION PRIVACY, (U)
APR 67 43P PETERSEN,H. E. ITURN,R. I
REPT. NO. P-3504

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT SPRING JOINT COMPUTER CONFERENCE, ATLANTIC CITY, N. J. 17-19 APR 1967.

DESCRIPTORS: (*COMPUTERS, CONTROL SYSTEMS), TIME SHARING, REMOTE CONTROL SYSTEMS, PROTECTION, COUNTERMEASURES, VULNERABILITY (U)

VARIOUS QUESTIONS OF PROVIDING INFORMATION PRIVACY FOR REMOTELY ACCESSIBLE ON-LINE, TIME-SHARED INFORMATION SYSTEMS ARE EXPLORED. SUCH SYSTEMS, ESPECIALLY THE REMOTE TERMINALS AND THE COMMUNICATION NETWORK, ARE VULNERABLE TO THREATS TO PRIVACY RANGING FROM ACCIDENTAL DUMPING OF INFORMATION AS A RESULT OF HARDWARE OR SOFTWARE FAILURES TO DELIBERATE PENETRATION USING SOPHISTICATED EQUIPMENT. DELIBERATE ATTACKS ARE TO BE EXPECTED SINCE PAYOFF FROM OBTAINED, ALTERED, OR ERASED INFORMATION COULD BE HIGH. THE RESOURCES REQUIRED VARY FROM THE COST OF A TAPE RECORDER TO A LARGE INVESTMENT IN EQUIPMENT AND KNOW-HOW. THE PROTECTIVE TECHNIQUES DISCUSSED IN THIS PAPER INCLUDE: SHIELDING TO REDUCE ELECTRO-MAGNETIC EMANATIONS; USE OF ONCE-ONLY PASSWORDS FOR ACCESS CONTROL; APPLICATION OF PRIVACY TRANSFORMATIONS TO CONCEAL INFORMATION IN USER-PROCESSOR COMMUNICATIONS AND IN DATA FILES; RECORDING OF ATTEMPTED PENETRATIONS; AND SYSTEMATIC VERIFICATION OF THE HARDWARE AND SOFTWARE INTEGRITY. IT APPEARS POSSIBLE TO ENGINEER VARIOUS PRIVACY PROTECTION TECHNIQUES INTO INFORMATION SYSTEMS SO THAT THE COST OF PROTECTION IS PROPORTIONAL TO THE AMOUNT RECEIVED, AND IS BORNE LARGELY BY THOSE USERS WHO DESIRE PRIVACY FOR THEIR COMMUNICATIONS AND/OR FILES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-651 707 9/2
NAVAL RESEARCH LAB WASHINGTON D C
MULTIPROCESSOR OPERATING SYSTEMS. (U)
APR 67 33P WALD,BRUCE I
REPT. NO. NRL-6531
PROJ: RF-001-08-41-4552

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, STATE-OF-THE-ART REVIEWS), (*DATA PROCESSING SYSTEMS, OPTIMIZATION), (*MULTIPLE OPERATION, COMPUTERS), PROGRAMMING(COMPUTERS), HISTORY, MONTE CARLO METHOD, DIGITAL COMPUTERS, THESES, SCHEDULING, BIBLIOGRAPHIES (U)
IDENTIFIERS: MULTIPROCESSING, MULTIPROGRAMMING (U)

THE HISTORY AND PRESENT STATUS (1965) OF MULTIPROCESSING, MULTIPROGRAMMING, AND TIMESHARING ARE REVIEWED. IT IS CONCLUDED THAT, DESPITE THEIR DIVERSE HISTORIES, THESE TECHNIQUES ARE DESTINED TO BE INTERTWINED. ALTHOUGH THE MECHANICAL PROBLEMS IN OPERATING SYSTEMS THAT EXPLOIT THESE TECHNIQUES HAVE LARGELY BEEN SOLVED AND THE DIFFICULT MEMORY ALLOCATION PROBLEM IS ON THE BRINK OF SOLUTION, THE IMPORTANT QUESTION OF OPTIMUM OPERATING SYSTEM STRATEGY IN INITIATING, SUSPENDING, AND TERMINATING JOBS IS LARGELY UNEXPLORED. SUGGESTIONS ARE MADE CONCERNING MODELS WHICH MIGHT BE SUITABLE FOR BOTH ANALYTIC AND MONTE-CARLO APPROACHES TO THE OPTIMIZATION OF OPERATING SYSTEM STRATEGY AND TO THE SELECTION OF OPTIMUM HARDWARE MIXES. AN EXTENSIVE BIBLIOGRAPHY IS INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-653 142 9/2 17/2 5/1
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J
INTRODUCTION TO EXTENDED, TIME-SHARED PROCESSOR SYSTEMS. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
FEB 67 20P DUNN,ROBERT M. ;
REPT. NO. ECOM-2806
PROJ: DA-1E6-20501-A485
TASK: 1E6-2501-A485-01

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, *DATA PROCESSING SYSTEMS), MOTIVATION, COMMUNICATION SYSTEMS, DATA STORAGE SYSTEMS, MANAGEMENT PLANNING (U)
IDENTIFIERS: MULTIPROCESSING (U)

THE EXTENDED, TIME-SHARED PROCESSOR SYSTEM IS MOTIVATED AND DEFINED. THE PURPOSE OF THE DISCUSSION IS TO CHARACTERIZE AND EVALUATE THIS CONCEPT. IN THE COURSE OF THE DISCUSSION, CURRENT TIME-SHARED SYSTEMS, THEIR CHARACTERISTICS, SOME OF THEIR TECHNICAL IMPLICATIONS, AND SOME OF THEIR PROBLEMS ARE REVIEWED. THE REVIEW YIELDS IMPLICATIONS AS TO THE ESSENTIAL CHARACTERISTICS OF THE EXTENDED, TIME-SHARED PROCESSOR SYSTEM. THE DISCUSSION ENDS WITH THE CONCLUSION THAT THE EXTENDED, TIME-SHARED PROCESSOR SYSTEM IS A LIMITED INSTANCE OF A MORE GENERALIZED SET OF ADAPTIVE, PARALLEL PROCESSOR SYSTEMS WHICH SEEK TO AUTOMATICALLY AND DYNAMICALLY DISTRIBUTE THEIR LOAD THROUGHOUT THE PROCESSOR NETWORK. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-653 465 9/2 9/5 12/2
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF ELECTRICAL ENGINEERING
THE INPUT/OUTPUT AND CONTROL SYSTEM OF THE MOORE SCHOOL PROBLEM SOLVING FACILITY. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 67 150P MORTON,RICHARD P. ;
WOLFBERG,MICHAEL S. ;
REPT. NO. 67-30
CONTRACT: NONR-551(40)

UNCLASSIFIED REPORT

DESCRIPTORS: (*TELETYPE SYSTEMS, *INPUT-OUTPUT DEVICES), (*PROBLEM SOLVING, DIGITAL COMPUTERS), INFORMATION RETRIEVAL, REAL TIME, INTERACTIONS, PROGRAMMING(COMPUTERS), SCHEDULING, REMOTE CONTROL SYSTEMS, MANAGEMENT ENGINEERING, COMPUTER PROGRAMS, CODING, INSTRUCTION MANUALS, DOCUMENTATION, BIBLIOGRAPHIES, GRAPHICS, PICTURES, PROCESSING (U)

THE REPORT DOCUMENTS THE EFFORT WHICH HAS TO DATE GONE INTO PROVIDING THE ON-LINE, REAL-TIME CAPABILITY NEEDED FOR THE MOORE SCHOOL PROBLEM SOLVING FACILITY. THE FACILITIES DESCRIBED ALLOW A USER AT A REMOTE TERMINAL TO PREPARE INPUT, EXECUTE PROGRAMS ON A COMPUTER AND EXAMINE HIS OUTPUT. THE PROGRAMS DESCRIBED ARE RESPONSIBLE FOR CONTROLLING THIS PROCESS BY TRANSMITTING AND BUFFERING THE DATA TO AND FROM THE COMPUTER, TRANSLATING BETWEEN EXTERNAL AND INTERNAL CODES, AND SCHEDULING THE COMPUTERS' EFFORTS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-654 624 9/2 5/1
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
EXPERIMENTAL INVESTIGATION OF USER PERFORMANCE IN TIME-SHARED COMPUTING SYSTEMS: RETROSPECT, PROSPECT, AND THE PUBLIC INTEREST. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
MAY 67 105P SACKMAN,H. I
REPT. NO. SP-2846
CONTRACT: F19628-67-C-0004

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, DATA PROCESSING SYSTEMS), (*DATA PROCESSING SYSTEMS, PERFORMANCE(HUMAN)), MAN-MACHINE SYSTEMS, MANAGEMENT PLANNING, PREDICTIONS, PROBLEM SOLVING, REVIEWS, HUMAN ENGINEERING, REAL TIME, STATISTICAL ANALYSIS (U)
IDENTIFIERS: EVALUATION, ON-LINE SYSTEMS, OFF-LINE SYSTEMS (U)

THIS STUDY WAS CONDUCTED TO SURVEY THE FIELD OF USER STUDIES IN TIME-SHARING, AND TO DEVELOP A CONCEPTUAL FRAMEWORK FOR COOPERATIVE, LONG-RANGE APPLIED RESEARCH IN THIS AREA--ULTIMATELY TO SERVE THE PUBLIC INTEREST IN THE DEVELOPMENT OF THE COMPUTER UTILITY. THE INTRODUCTION TRACES THE HISTORICAL ROOTS OF USER PROBLEMS AND DEVELOPS THE NEED FOR EXPERIMENTAL STUDIES OF USER PERFORMANCE IN TIME-SHARING SYSTEMS. THE LITERATURE REVIEW REVEALS A LARGE AND GROWING EXPERIMENTAL LAG BETWEEN THE EXTENSION OF INFORMATION SERVICES AND VERIFIED KNOWLEDGE OF USER PERFORMANCE. A CONCEPTUAL FRAMEWORK FOR USER STUDIES IN TIME-SHARING IS CONSTRUCTED FOLLOWING THREE BASIC STEPS. THE FIRST DEFINES THIS FIELD OF INQUIRY. THE DEFINITION ESSENTIALLY PORTRAYS THIS AREA AS EXPERIMENTALLY DERIVED TECHNIQUES AND FINDINGS COMPRISING THE SHARED AND VERIFIED EXPERIENCES OF THE USER COMMUNITY. THE SECOND STEP BUILDS AN EVOLUTIONARY SYSTEMS FRAMEWORK FOR USER STUDIES, ENCOMPASSING THE DESIGN, DEVELOPMENT AND OPERATION OF USER SYSTEMS, AND RELATING TIME-SHARED USER SYSTEMS TO OTHER TYPES OF COMPUTER-AIDED SYSTEMS. THE LAST IS A CLASSIFICATION OF USER PROBLEMS INTO FOUR BROAD AREAS--METHODOLOGICAL, NORMATIVE, BEHAVIORAL, AND SOCIAL EFFECTIVENESS. NUMEROUS PROBLEMS, HYPOTHESES AND RECOMMENDATIONS FOR EXPERIMENTAL INVESTIGATION OF USER PERFORMANCE ARE MADE FOR EACH OF THESE FOUR CATEGORIES. THE STUDY CONCLUDES WITH A PLEA FOR INTERDISCIPLINARY APPLIED RESEARCH TO MEE(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-654 678 9/2 15/7 17/2
RAND CORP SANTA MONICA CALIF
USE OF MULTIPLE ON-LINE, TIME-SHARED COMPUTER CONSOLES IN SIMULATION AND GAMING, (U)
JUN 67 63P NORTHROP,G. M. I
REPT. NO. P-3606

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT SYMPOSIUM ON NATIONAL GAMING COUNCIL, WASHINGTON, D. C. 8-9 JUN 1967.

DESCRIPTORS: (*WAR GAMES, SIMULATION), (*DATA PROCESSING SYSTEMS, *SIMULATION), TIME SHARING, CONTROL SYSTEMS, PROGRAMMING(COMPUTERS), REAL TIME, COMMUNICATION SYSTEMS, PROGRAMMING LANGUAGES (U)
IDENTIFIERS: ON-LINE SYSTEMS, JOSS (U)

SOME PRESENT-DAY ON-LINE, TIME-SHARED, MULTIPLE-CONSOLE COMPUTER SYSTEMS PROVIDE FOR USE OF A COMMON FILE SYSTEM. ONE CONSOLE CAN FILE A MESSAGE (I.E., 'INFORMATION') WHICH CAN BE RECALLED BY ANOTHER CONSOLE. BY PROGRAMMING CONSOLES TO PERIODICALLY INTERROGATE CERTAIN FILES, A CRUDE, BUT HIGHLY SERVICEABLE, STORE-AND-FORWARD COMMUNICATION SYSTEM CAN BE CREATED AND LARGE NUMBERS OF ON-LINE, TIME-SHARED COMPUTER CONSOLES CAN BE USED TO ENTER, RECALL, PROCESS, AND DISPLAY INFORMATION TYPICAL OF THAT USED IN COMMAND AND CONTROL SYSTEMS AND THE PLAY OF GAMES. THE RAND CORPORATION'S JOSS SYSTEM PROVIDES THE CAPABILITY DESCRIBED. IN ADDITION TO ITS USE FOR THE SOLUTION OF SCIENTIFIC PROBLEMS, IT IS PRESENTLY BEING EMPLOYED TO SIMULATE IN REAL TIME ELEMENTS OF AN AUTOMATED TACTICAL AIR CONTROL SYSTEM AND IN THE PLAY OF TACTICAL GAMES AND GAMES OF GLOBAL STRATEGY. THE SIMPLE, EASY-TO-LEARN PROGRAMMING LANGUAGE MAKES FEASIBLE CONSIDERABLE EXPERIMENTATION WITH SCHEDULING ALGORITHMS, DECISION RULES, ETC. THIS PAPER DESCRIBES THE BASIC FEATURES OF THE USE OF MULTIPLE JOSS CONSOLES IN SIMULATION AND GAMING AND DISCUSSES SOME OF THE ADVANTAGES, LIMITATIONS, AND LESSONS LEARNED TO DATE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-654 749 9/2 17/2 5/2
COMRESS INC WASHINGTON D C
PROPOSED SYSTEM CONCEPT FOR REAL-TIME PROCESSING OF AUTODIN MESSAGES. (U)
MAY 67 48P
CONTRACT: F19628-67-C-0259
MONITOR: ESD TR-67-294

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, REAL TIME), (*INFORMATION RETRIEVAL, DATA TRANSMISSION SYSTEMS), COMMAND + CONTROL SYSTEMS, MAN-MACHINE SYSTEMS, DECISION MAKING (U)

THE REPORT IS THE PROPOSED SYSTEM CONCEPT FOR THE REAL-TIME PROCESSING OF AUTODIN MESSAGES AT THE DATA SERVICES CENTER, HQ USAF. THE DESCRIPTION OF THE PRESENT SYSTEM EMPHASIZES THE BATCH PROCESSING NATURE OF THE PRESENT COMPUTER PROGRAMS, AND THEIR INTERRELATIONSHIPS WITH EACH OTHER AND WITH THE MANUAL RCS CONTROL SYSTEM. THE PROBLEMS THAT CHARACTERIZE THE PRESENT SYSTEM ARE PRINCIPALLY THOSE OF THE TIME THAT ELAPSES BETWEEN RECEIPT OF A MESSAGE ON THE AUTODIN TERMINAL AND THE IDENTIFICATION OF ERRORS THAT INVALIDATE THE MESSAGE AND REQUIRE FURTHER CONTACT WITH THE ORIGINATOR. THE MANUAL RCS CONTROL FILE WAS IDENTIFIED AS BEING ONE OF THE MAJOR ELEMENTS OF THIS TIME LAPSE BECAUSE OF THE PERIODIC MANUAL TRANSCRIPTION OF INCOMING MESSAGES TO HANDWRITTEN CONTROL CARDS. THE PROPOSED SYSTEM EMPHASIZES THE DESIRABILITY OF PERFORMING DATA EDITS IMMEDIATELY UPON RECEIPT OF EACH MESSAGE AND THE INSTANTANEOUS TRANSMISSION OF AN ERROR MESSAGE TO THE ORIGINATOR WHEN THE INCOMING MESSAGE HAS FAILED A FORMAT EDIT. THE REAL-TIME CONCEPT IS ALSO THE MAIN ELEMENT OF MANAGEMENT CONTROL THROUGH THE COMMAND AND QUERY TERMINAL THAT PROVIDES ON-LINE MANAGEMENT DECISION-MAKING ABILITY WITHOUT SACRIFICING ANY OF THE ADVANTAGES OF THE COMPUTER-CONTROLLED REAL-TIME SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-655 380 9/2
CARNEGIE INST OF TECH PITTSBURGH PA
TIME SHARED COMPUTERS, (U)
MAY 67 95P BELL,C. GORDON I
CONTRACT: SD-146
PROJ: 9718, C154501R
MONITOR: AFOSR 67-1618

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, DATA PROCESSING SYSTEMS), REAL TIME, AUTOMATION, SCHEDULING, ALGORITHMS, PROGRAMMING(COMPUTERS) (U)
IDENTIFIERS: MULTIPROGRAMMING, COMPUTER HARDWARE, COMPUTER SOFTWARE (U)

TIME-SHARING IS DISCUSSED GENERALLY TO INCLUDE ANY APPLICATION OF A COMPUTER SYSTEM WHICH HAS SIMULTANEOUS USERS. THE DISCUSSION EMPHASIZES THE GENERAL PURPOSE TIME-SHARING, SINCE SPECIAL PURPOSE TIME-SHARING, 'REAL TIME', AND 'ON LINE' SYSTEMS ARE A SUBSET. 'GRACEFUL CREATION', OR THE 'BOOT STRAPPING' OF A SYSTEM, IS DESCRIBED IN WHICH NEWLY CREATED INDIVIDUAL USER PROCEDURES ARE IMMEDIATELY AVAILABLE TO THE WHOLE COMMUNITY OF USERS, AND THE SYSTEM EXPANDS IN AN OPEN-ENDED FASHION BECAUSE MANY USERS CONTRIBUTE TO THE FORMATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-665 642 9/2 14/5
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS
A GENERAL PURPOSE VIDEO INPUT DEVICE FOR A DIGITAL
COMPUTER. (U)
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
JUL 67 48P STROLLO,THEODORE R. I
TEITELMAN,WARREN I
REPT. NO. BBN-1637
CONTRACT: NONR-4768(00)
PROJ: RR-003-10-02

UNCLASSIFIED REPORT

DESCRIPTORS: (*INPUT-OUTPUT DEVICES, DIGITAL COMPUTERS), (*CHARACTER RECOGNITION, DATA PROCESSING SYSTEMS), REAL TIME, TIME SHARING, PATTERN RECOGNITION, DATA STORAGE SYSTEMS, CAMERAS (U)
IDENTIFIERS: IMAGE DISSECTOR CAMERA SYSTEM (U)

A GENERAL PURPOSE VIDEO INPUT DEVICE WAS ACQUIRED AND INTERFACED TO A DIGITAL COMPUTER. TIME-SHARED ACCESS TO THIS DEVICE WAS PROVIDED IN REAL-TIME. THE DEVICE WAS THEN USED TO PROVIDE INPUT FOR A HAND WRITTEN CHARACTER RECOGNITION SCHEME. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-455 978 5/10 9/2
WESTERN AUSTRALIA UNIV NEDLANDS DEPT OF PSYCHOLOGY
A COMPUTER-LINKED RUNWAY FOR REAL TIME
OPERATION, (U)
67 4P NICHOLLS,IAN G. I
CONTRACT: AF-AFOSR-968-65
PROJ: AF-9778
TASK: 977801
MONITOR: AFOSR 67-1751

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN PSYCHON SCI V7 N9
P319-20 1967.

DESCRIPTORS: (*PSYCHOMETRICS, DATA PROCESSING
SYSTEMS), (*TIME SHARING, EXPERIMENTAL
DESIGN), REAL TIME, COSTS, INPUT-OUTPUT
DEVICES, COMPUTER PROGRAMS, RATS, RUNWAYS,
VELOCITY, RELIABILITY (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE PAPER OUTLINES A SYSTEM FOR RECORDING THE
RUNNING TIMES OF RATS IN A STRAIGHT RUNWAY USING A
TIME-SHARED COMPUTER. A DESCRIPTION IS GIVEN OF
THE HARDWARE AND SOFTWARE USED, AND THE ADVANTAGES OF
THE SYSTEM ARE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AU0396

AD-657 783 9/2 17/2
CARNEGIE INST OF TECH PITTSBURGH PA DEPT OF COMPUTER SCIENCE
TOWARD ECONOMICAL REMOTE COMPUTER ACCESS, (U)
JUL 67 18P GOLD,MICHAEL M. ;
SELWYN,LEE L. ;
CONTRACT: SD-146, NONR-4102(01)
PROJ: AF-9718
MONITOR: AFOSR 67-2018

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERS, *REMOTE CONTROL SYSTEMS), (*TIME SHARING, ECONOMICS), (*COMMUNICATION SYSTEMS, TIME SHARING), COSTS, TELETYPE SYSTEMS, TELEPHONE COMMUNICATION SYSTEMS, EFFICIENCY (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE COMMUNICATIONS SERVICES AVAILABLE TO A USER REMOTELY ACCESSING A TIME-SHARED COMPUTER SYSTEM ARE CONSIDERED IN LIGHT OF THE REQUIREMENTS OF SUCH USAGE. WHILE TIME-SHARED SYSTEMS ARE DESIGNED TO PROVIDE THE COMPUTER USER WITH THE OPPORTUNITY TO WORK AT HIS MOST ADVANTAGEOUS SPEED AND INTERACT WITH THE COMPUTER AT HIS CONVENIENCE, AVAILABLE COMMUNICATIONS SERVICES HAVE NOT AS YET BEEN DESIGNED FOR EFFICIENT AND ECONOMIC TIME-SHARING COMPUTER USAGE. A PLAN IS SUGGESTED WHICH WOULD SHARE COMMUNICATION FACILITIES AMONG MANY USERS; EACH USER ACCESSING THE FACILITY FOR BRIEF PERIODS OF TIME. ALTHOUGH PRESENT TECHNOLOGY WOULD ALLOW A GROUP OF USERS TO CONSTRUCT A SHARED-CARRIER OPERATION BY LEASING CONVENTIONAL CIRCUITS FROM THE COMMON CARRIERS, IT IS SUGGESTED THAT THE COMMON CARRIERS OFFER A SHARING SERVICE, CHARGING FOR COMMUNICATIONS BY THE AMOUNT OF INFORMATION TRANSMITTED RATHER THAN THE TIME THE CIRCUIT IS OPEN. UNLESS SUCH A SYSTEM IS IMPLEMENTED, THE FULL ECONOMIC ADVANTAGES OF TIME-SHARING CANNOT BE ATTAINED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-658 477 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
THE SDC TIME-SHARING SYSTEM REVISITED. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
AUG 67 30P SCHWARTZ,JULES I. ;
WEISSMAN,CLARK ;
REPT. NO. SP-2876

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE 1967 NATIONAL ACM CONFERENCE, WASHINGTON, D. C., 29-31 AUGUST 1967.

DESCRIPTORS: (*TIME SHARING, REVIEWS), (*DATA PROCESSING SYSTEMS, TIME SHARING), PREDICTIONS, COMPUTER STORAGE DEVICES, INPUT-OUTPUT DEVICES, PROGRAMMING LANGUAGES, MANAGEMENT PLANNING, COSTS, FLOW CHARTING, MAGNETIC CORE STORAGE, EFFICIENCY, MAINTENANCE (U)
IDENTIFIERS: ON-LINE SYSTEMS, LISP, LIST PROCESSING (U)

THE SDC TIME-SHARING SYSTEM (TSS), WHICH OPERATES ON AN IBM AN/FSQ-32 COMPUTER AT SYSTEM DEVELOPMENT CORPORATION, SANTA MONICA, WAS ORIGINALLY DESCRIBED IN A PAPER ENTITLED 'A GENERAL-PURPOSE TIME-SHARING SYSTEM,' PUBLISHED IN 1964. TSS HAS NOW BEEN IN OPERATIONAL USE FOR FOUR YEARS, SERVING A LARGE AND VARIED COMMUNITY OF LOCAL AND REMOTE USERS. THIS PAPER DESCRIBES THE PRESENT CAPABILITIES OF TSS, DISCUSSES THE CRITICAL PROBLEMS OF RESOURCE MANAGEMENT (AND THE SOLUTIONS TO THOSE PROBLEMS EMPLOYED IN TSS), AND REVIEWS THE AUTHORS' ORIGINAL STATEMENTS REGARDING THE ADVANTAGES OF TIME-SHARING FOR SUCH TASKS AS ON-LINE PROGRAMMING AND DEBUGGING. THE TECHNIQUES FOR MANAGING CPU TIME, STORAGE MEDIA, AND USER/SYSTEM INTERACTION ARE DESCRIBED IN SOME DETAIL. AN ATTEMPT IS MADE TO POINT OUT THE WEAK AS WELL AS THE STRONG POINTS OF TSS, AND TO INDICATE SOME OF THE EFFECTS THAT SYSTEMS SUCH AS TSS HAVE HAD UPON COMPUTING TECHNOLOGY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 362 9/2
RAND CORP SANTA MONICA CALIF
JOSS: 20,000 HOURS AT THE CONSOLE--A STATISTICAL SUMMARY, (U)
AUG 67 43P BRYAN,G. E. I
REPT. NO. RM-5359-PR
CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPECIAL PURPOSE COMPUTERS, *INPUT-OUTPUT DEVICES), MAN-MACHINE SYSTEMS, MONITORS, TIME SHARING, PROBLEM SOLVING, INTERACTIONS, SCHEDULING, COMPUTER STORAGE DEVICES, TYPEWRITERS (U)
IDENTIFIERS: JOSS (U)

RESULTS OF THE FIRST YEAR OF JOSS OPERATION ON THE DIGITAL EQUIPMENT CORPORATION PDP-6. THE GATHERING OF DATA FOR REVENUE ACCOUNTING AND FOR PRODUCING PERFORMANCE MEASURES OF THE JOSS SYSTEM AND ITS USERS IS A MAJOR FUNCTION OF THE MONITOR, THE SYSTEM'S SUPERVISORY UNIT. AS GENERATED BY THE INSTRUMENTING PROGRAMS, STATISTICS ON USAGE INDICATE THAT OVER 700 INDIVIDUALS MAKE USE OF JOSS SERVICE. EVERY MONTH 400 DIFFERENT USERS GENERATE OVER 200 SESSIONS EACH DAY. TYPICAL USER SESSIONS LAST 45 MINUTES AND AVERAGE 4 MINUTES OF COMPUTING TIME, ALTHOUGH 50 PERCENT LAST LESS THAN 7 SECONDS. DURING AN AVERAGE SESSION, 16,000 JOSS STATEMENTS ARE EXECUTED, AND 68,000 ARITHMETIC OPERATIONS ARE PERFORMED. JOSS USER REQUESTS ARE SUBSTANTIALLY DIFFERENT FROM THOSE MADE ON OTHER TIME-SHARED SYSTEMS: THERE ARE A RELATIVELY LARGE NUMBER OF REQUESTS FOR SHORT AMOUNTS OF COMPUTING AND A RELATIVELY SMALL NUMBER FOR A LARGE AMOUNT OF COMPUTING. THE AMOUNT OF COMPUTING, HOWEVER, IS BY NO MEANS TRIVIAL, AS SEEN FROM THE NUMBER OF STATEMENTS AND ARITHMETIC OPERATIONS PERFORMED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-669 733 5/1
RAND CORP SANTA MONICA CALIF
DESIGN CONSIDERATIONS FOR CAMCOS, A COMPUTER-ASSISTED MAINTENANCE PLANNING AND CONTROL SYSTEM, (U)
JUL 67 66P DREZNER,S. M. ;
VANHORN,R. L. ;
REPT. NO. RM-5255-PR
CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (*MAINTENANCE, *CONTROL SYSTEMS), (*MANAGEMENT PLANNING, COMPUTERS), SCHEDULING, REAL TIME, AIRCRAFT, MONITORS, MAINTENANCE PERSONNEL, AIR FORCE, LOGISTICS, DATA STORAGE SYSTEMS, INFORMATION RETRIEVAL, JOB ANALYSIS (U)

A DESCRIPTION IS PRESENTED OF CAMCOS, AN ON-LINE, REAL-TIME COMPUTER SYSTEM FOR AIR FORCE BASE-LEVEL MAINTENANCE PLANNING AND CONTROL ACTIVITIES. CAMCOS IS DESIGNED TO PROVIDE A HIGH-LEVEL CAPABILITY FOR CRITICAL MISSIONS AND ECONOMICAL PERFORMANCE DURING ROUTINE OPERATIONS. A MISSION GENERATOR HELPS TO SELECT AN AIRCRAFT TO FULFILL A SORTIE REQUEST, AND SENDS THE DISPATCH NOTICES TO READY IT FOR ITS MISSION. THE SYSTEM HANDLES PLANNING, SCHEDULING, DISPATCHING, AND CONTROL FOR FLIGHT-LINE, BENCH, AND PERIODIC MAINTENANCE ON A UNIFIED BASIS THAT RELATES MAINTENANCE TO OPERATIONAL REQUIREMENTS. THE CURRENT STATUS OF ALL RESOURCES, WORKLOAD, AND AIRCRAFT IS MAINTAINED IN THE SYSTEM. AN EVENT MONITOR FOLLOWS ALL FLIGHT-LINE JOBS AND OTHER CRITICAL TASKS, NOTIFYING THE APPROPRIATE MANAGER IF A DEPARTURE FROM PLAN OCCURS. JOB REQUIREMENTS FOR REPORTED MALFUNCTIONS AND OTHER PRIORITY WORKLOAD ARE MATCHED AGAINST RESOURCES, AND SCHEDULED TO MEET AIRCRAFT RECOVERY TARGETS. PERSONNEL IN MAINTENANCE SQUADRONS REPORT WORK REQUIREMENTS; EVENTS SUCH AS START OF JOB, END OF JOB, ETC.; AND CHANGES IN RESOURCE AVAILABILITY THROUGH THE CONTROL SYSTEM. THESE DATA ARE USED FOR PLANNING AND CONTROLLING THE MAINTENANCE ACTIVITY AND ARE SAVED BY THE SYSTEM FOR SUBSEQUENT ANALYSIS AND REPORTING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 734 9/2 5/9
RAND CORP SANTA MONICA CALIF
THE JOSS PRIMER, (U)
AUG 67 45P MARKS,S. L. (ARMERDING,G. W. ;
REPT. NO. RM-5220-PR
CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPECIAL PURPOSE COMPUTERS, *DATA PROCESSING SYSTEMS), (*INPUT-OUTPUT DEVICES, *COMPUTER OPERATORS), TIME SHARING, MAN-MACHINE SYSTEMS, INTERACTIONS, TYPEWRITERS, TRAINING, INSTRUCTION MANUALS (U)

INTRODUCTION TO JOSS, RAND'S TIME-SHARED COMPUTING SYSTEM, FOR THE BEGINNING USER WITH EXAMPLES ILLUSTRATING THE SYSTEM'S BASIC ELEMENTS, WHICH CAN EASILY BE LEARNED WITHOUT PROGRAMMING EXPERIENCE. SEATED AT A MOBILE CONSOLE CONNECTED TO A COMPUTER VIA TELEPHONE LINES, THE PRIMER READER FOLLOWS THE INSTRUCTIONS STEP BY STEP, DUPLICATING EXAMPLES, TRYING VARIATIONS, AND OBSERVING RESULTS. HE TYPES COMMANDS IN IMPERATIVE ENGLISH SENTENCES, INSTRUCTING JOSS TO PERFORM PROCEDURES IN ARITHMETIC, ALGEBRA, TRIGONOMETRY, AND LOGIC. JOSS RESPONDS WITH ANSWERS IN USER-PRESCRIBED FORMATS AND WITH ERROR MESSAGES THAT HELP THE USER CORRECT ERRORS AND RESUME PROCESSING. TO EXTEND THE BEGINNER'S KNOWLEDGE OF JOSS, THE PRIMER CONCLUDES WITH LISTS OF JOSS COMMANDS AND FUNCTIONS AND SUGGESTED READING IN THE JOSS LITERATURE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 810 12/2 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE OPERATIONS RESEARCH CENTER
OPERATIONAL ANALYSIS OF A COMPUTATION CENTER. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUL 67 90P RAYNAUD,THIERRY GABRIEL I
REPT. NO. TR-32
CONTRACT: DA-31-124-ARO(D)-209, NONR-3963(06)
PROJ: DA-2001(50)B704, DSR-75217
MONITOR: AROD 968:47-M

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: MASTER'S THESIS.

DESCRIPTORS: (*OPERATIONS RESEARCH, *DIGITAL COMPUTERS), (*TIME SHARING, *REAL TIME), THESES, DATA PROCESSING SYSTEMS, FLOW CHARTING, EFFICIENCY, COSTS, SIMULATION, MANAGEMENT ENGINEERING (U)

THE REPORT PRESENTS A PICTURE OF THE M. I. T. COMPUTATION CENTER WITH EMPHASIS UPON PRESENT PERFORMANCE AND ITS SUPERVISION. THE ACTUAL CONFIGURATION IS ASSUMED. AFTER A PRESENTATION OF THE ORGANIZATIONAL FRAMEWORK, OTHER BATCH-PROCESSING OPERATIONS ARE BRIEFLY DISCUSSED (AS A SUMMARY OF MANY DIRECT OBSERVATIONS OF THE GENERAL OPERATION OF THE CENTER). A DETAILED ANALYSIS OF CERTAIN VARIABLES IS MADE FROM DATA ON TIME-SHARING OPERATIONS: SYSTEM PARAMETERS; GRADE OF SERVICE; AND USER'S BEHAVIOR. SIMULATION IS USED TO GET FURTHER KNOWLEDGE OF THE DYNAMIC BEHAVIOR. THREE MODELS ARE PRESENTED AND THEY USE AS INPUT THE RESULTS OF THE OBSERVATIONS REPORTED IN THE PREVIOUS PARTS. THE MODELS REPRESENT THREE DIFFERENT STANDPOINTS: REAL-TIME DECISIONS (REACTION TO OVERLOAD CONDITIONS); DAY-TO-DAY OPERATIONS (RULES FOR BALANCING THE BATCH-PROCESSING LOAD AND THE TIME-SHARING LOAD); LONG-TERM STUDY (SEVERAL MANAGEMENT ATTITUDES FOR THE NEXT SIX MONTHS INTERIM PERIOD ARE STUDIED). (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-660 836 9/2
RAND CORP SANTA MONICA CALIF
JOSS; ASSEMBLY LISTING OF THE SUPERVISOR, (U)
AUG 67 188P BRYAN,G. E. I
REPT. NO. RM-5437-PR
CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, DATA PROCESSING SYSTEMS), (*CONTROL SYSTEMS, DATA PROCESSING SYSTEMS), SCHEDULING, DIGITAL COMPUTERS, CODING, MAN-MACHINE SYSTEMS, INPUT-OUTPUT DEVICES, DATA STORAGE SYSTEMS, REAL TIME (U)
IDENTIFIERS: JOSS, ON-LINE SYSTEMS, MAGNETIC DRUM STORAGE (U)

THE REPORT GIVES A PRESENTATION OF THE CODE FOR THE MONITOR (SUPERVISOR) UNIT OF JOSS, RAND'S ON-LINE, TIME-SHARED COMPUTER SYSTEM. THIS UNIT, WHICH ACTS AS A SCHEDULING, RESOURCE-ALLOCATING, AND SYNCHRONIZING DEVICE, EXERCISES OVERALL CONTROL OF THE SYSTEM'S OPERATION. IT ENSURES THAT ALL DATA AND HARDWARE NECESSARY FOR A PARTICULAR ACTION ARE SIMULTANEOUSLY AVAILABLE, AND METERS THE OPERATION OF THE SYSTEM TO PROVIDE REVENUE ACCOUNTING INFORMATION AND DATA DESCRIBING SYSTEM PERFORMANCE AND USER OPERATIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 604 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TRACE--MODEL II USER'S GUIDE, TIMESHARED ROUTINES FOR ANALYSIS, CLASSIFICATION AND EVALUATION, (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
OCT 67 190P ESADA,RICHARD P. I
REPT. NO. TM-2621/003/00
CONTRACT: DAHC15-67-C-0277

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTER PROGRAMS, INSTRUCTION MANUALS), (*TIME SHARING, DATA PROCESSING SYSTEMS), PROGRAMMING LANGUAGES, SUBROUTINES, PROBLEM SOLVING, MAN-MACHINE SYSTEMS (U)
IDENTIFIERS: ON-LINE SYSTEMS, TRACE, JOVIAL (U)

THE DOCUMENT PRESENTS A USER'S DESCRIPTION OF THE TRACE SYSTEM, WHICH PROVIDES AN ON-LINE TECHNIQUE FOR SCANNING DATA AND DERIVING VARIABLES. IT IS DIVIDED INTO TWO MAIN SECTIONS: THE FIRST A TUTORIAL GUIDE INTRODUCING THE USER TO THE BASIC PRINCIPLES OF THE SYSTEM, AND THE SECOND A REFERENCE GUIDE TO THE ENTIRE BODY OF THE TRACE PROGRAM. THE USER IS SHOWN HOW TO INITIATE AN INTERACTION WITH THE TIME-SHARING SYSTEM, HOW TO EMPLOY EVERY CAPABILITY OF TRACE, WHAT ERRORS MAY BE EXPECTED IN OPERATION, AND WHAT STATISTICAL PRODUCTS MAY BE DERIVED THROUGH USE OF THE PROGRAM. A COMPLETE INDEX ALLOWS THE USER TO REFER READILY TO ANY PORTION OF THE DOCUMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 665 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARING VERSUS BATCH PROCESSING; THE
EXPERIMENTAL EVIDENCE. (U)
DESCRIPTIVE NOTE; PROFESSIONAL PAPER,
OCT 67 43P SACKMAN,H. I
REPT. NO. SP-2775

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING,
PERFORMANCE(ENGINEERING)), DATA PROCESSING
SYSTEMS, MAN-MACHINE SYSTEMS, EFFICIENCY, COST
EFFECTIVENESS, MOTIVATION, REVIEWS (U)
IDENTIFIERS: ON-LINE SYSTEMS, OFF-LINE SYSTEMS,
BATCH PROCESSING, EVALUATION (U)

THE CONTINUING CONTROVERSY OVER THE RELATIVE MERITS OF TIME-SHARING VERSUS BATCH PROCESSING HAS TAKEN A NEW AND SIGNIFICANT TURN FROM PREDISCIPLINARY SPECULATION TO APPLIED SCIENTIFIC EXPERIMENTATION. WITHIN THE LAST TWO YEARS, FIVE EXPERIMENTAL STUDIES HAVE APPEARED IN THE LITERATURE, EACH COMPARING SOME FORM OF ONLINE AND OFFLINE DATA PROCESSING WITH RESPECT TO MAN-MACHINE MEASURES OF SYSTEM PERFORMANCE. THESE FIVE PIONEERING STUDIES COMPRISE THE FIRST SUBSTANTIVE DATA BASE FOR COMPARING AND EVALUATING EXPERIMENTAL METHODOLOGY AND FINDINGS BEARING ON THE GROWING AND CHANGING COMPETITION BETWEEN TIME-SHARING AND BATCH PROCESSING SYSTEMS. THIS PAPER PROVIDES A CRITICAL REVIEW OF THESE FIVE EXPERIMENTS, SUMMARIZED FINDINGS, PROBLEMS AND PITFALLS, AND OFFERS RECOMMENDATIONS FOR FUTURE EXPERIMENTAL WORK. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 799 9/2 6/3
CALIFORNIA UNIV LOS ANGELES BRAIN RESEARCH INST
A USER-ORIENTED TIME-SHARED ONLINE SYSTEM. (U)
DESCRIPTIVE NOTE: REVISED ED.,
FEB 67 7P BETYAR,LASZLO I
CONTRACT: NONR-233(91), PHS-NB-02501-05

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN COMMUNICATIONS OF THE ACM V10 N7 P413-9 1967.
SUPPLEMENTARY NOTE: REVISION OF MANUSCRIPT RECEIVED JUL 66. RESEARCH SUPPORTED IN PART BY NASA, GRANT NSG-505.

DESCRIPTORS: (*TIME SHARING, DATA PROCESSING SYSTEMS), (*DIGITAL COMPUTERS, *BIOLOGY), ANALOG-TO-DIGITAL CONVERTERS, INPUT-OUTPUT DEVICES, PROGRAMMING LANGUAGES, MAN-MACHINE SYSTEMS, DATA STORAGE SYSTEMS (U)
IDENTIFIERS: LIST PROCESSING, ON-LINE SYSTEMS, MULTIPROCESSING (U)

AN EXISTING SYSTEM AND PLANNED ADDITIONS WITHIN THE DATA PROCESSING LABORATORY OF THE BRAIN RESEARCH INSTITUTE AT UCLA IS DESCRIBED. THE SYSTEM REPRESENTS AN ATTEMPT TO PROVIDE RESEARCH WORKERS OF THE INSTITUTE WITH THE ABILITY TO INTERACT DIRECTLY WITH A HIGHLY SOPHISTICATED DIGITAL COMPUTING COMPLEX IN THE MOST DIRECT AND SIMPLE FASHION POSSIBLE. IT IS ANTICIPATED THAT, WITH THE ACCUMULATION OF EXPERIENCE USING THE PRESENT SYSTEM, SIGNIFICANT ADVANCES WILL BE POSSIBLE IN THE SYSTEM DESIGN THROUGH DETERMINATION OF INTERFACE PARAMETERS BETWEEN THE BIOLOGICAL SCIENTIST AND THE DIGITAL COMPUTER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AD0396

AD-661 807 9/2 5/9
MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF CIVIL ENGINEERING
USE OF CTSS IN A TEACHING ENVIRONMENT, (U)
NOV 64 36P ROOS,DANIEL I
REPT. NO. MAC-TR-14
CONTRACT: NONR-4102(01)
PROJ: NR-048-189, RR-003-09-01

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, *TEACHING MACHINES), (*TEACHING METHODS, COMPUTERS), RELIABILITY, REAL TIME, STUDENTS, MOTIVATION, INPUT-OUTPUT DEVICES, PROGRAMMING(COMPUTERS) (U)
IDENTIFIERS: MAC PROJECT, ON-LINE SYSTEMS, BATCH PROCESSING, COMPUTER-AIDED INSTRUCTION, COMPATIBLE TIME-SHARING SYSTEM (U)

COMPUTER TIME-SHARING OFFERS MANY INTERESTING POSSIBILITIES FOR USE IN TEACHING COMPUTER TECHNOLOGY. IT MIGHT BE EXPECTED THAT WITH PROPER HARDWARE AND SOFTWARE, STUDENTS USING TIME-SHARING AS A TEACHING MACHINE COULD ACQUIRE PROFICIENCY IN THE FUNDAMENTALS OF PROGRAMMING MORE EASILY THAN USING BATCH-PROCESSING. TO TEST THIS HYPOTHESIS, THE M.I.T. DEPARTMENT OF CIVIL ENGINEERING DIVIDED A FRESHMAN PROGRAMMING CLASS, SO THAT HALF THE STUDENTS USED BATCH-PROCESSING METHODS, AND HALF USED THE PROJECT MAC TIME-SHARING SYSTEM TO DO THE SAME WORK. THE PAPER DESCRIBES THE EXPERIMENT AND ITS TENTATIVE RESULTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 861 9/2 5/1
TRACOR INC AUSTIN TEX
DATA MANAGEMENT: A COMPARISON OF SYSTEM FEATURES. (U)
OCT 67 43P ZIEHE,THEODORE W. I
REPT. NO. TRACOR-67-904-U
CONTRACT: N00014-67-C-0396
PROJ: NR-048-239, 007-001-01

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, MANAGEMENT PLANNING), MAN-MACHINE SYSTEMS, TIME SHARING, INDEXES, DOCUMENTATION, INFORMATION RETRIEVAL, DESIGN (U)
IDENTIFIERS: DATA MANAGEMENT, ON-LINE SYSTEMS (U)

FEATURES OF FOUR DATA MANAGEMENT SYSTEMS UNDER DEVELOPMENT ARE COMPARED. THE FOUR SYSTEMS ARE THE TIME-SHARED DATA MANAGEMENT SYSTEM (SYSTEM DEVELOPMENT CORPORATION) AND A VARIANT OF IT, THE REMOTE FILE MANAGEMENT SYSTEM (COMPUTATION CENTER, THE UNIVERSITY OF TEXAS); DATA MANAGER - 1 (AUERBACH CORPORATION); THE GENERALIZED INFORMATION SYSTEM (IBM); AND THE CATALOG SYSTEM (THE RAND CORPORATION). COMPARISONS ARE DRAWN IN TWO AREAS: EXTERNAL AND INTERNAL DATA STRUCTURING AND ORGANIZATION. SEVERAL DIFFERENCES AMONG THE SYSTEMS ARE NOTED AND BRIEFLY DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AD0396

AD-661 966 5/2 5/7 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
AN APPROACH TO THE ON-LINE INTERROGATION OF
STRUCTURED FILES OF FACTS USING NATURAL LANGUAGE. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
APR 66 88P KELLOGG,CHARLES H. ;
REPT. NO. SP-2431/000/00
CONTRACT: AF 19(628)-5166, ARPA ORDER-773

UNCLASSIFIED REPORT

DESCRIPTORS: (*INFORMATION RETRIEVAL,
*GRAMMARS), (*DATA PROCESSING SYSTEMS,
PROGRAMMING(COMPUTERS)), (*MAN-MACHINE
SYSTEMS, GRAMMARS), TIME SHARING, SYNTAX,
PROBLEM SOLVING, ALGORITHMS, SEMANTICS (U)
IDENTIFIERS: DATA MANAGEMENT, ON-LINE SYSTEMS (U)

THE ADVENT OF TIME-SHARED COMPUTER SYSTEMS PRESENTS THE COMPUTING COMMUNITY WITH THE NEW AND CHALLENGING OPPORTUNITY OF PROVIDING USERS WITH MORE POWERFUL AND EFFECTIVE TOOLS FOR PROBLEM SOLVING. FOR EXAMPLE, HAVING FACILITIES FOR RAPIDLY ACCESSING LARGE FILES OF STORED INFORMATION IMPLIES A CONCOMITANT NEED FOR DEVELOPING BETTER METHODS FOR INTERROGATING THE CONTENT OF THESE FILES. USER/COMPUTER INTERACTION IN FORMULATING PROBLEMS DEPENDS ON SUCH IMPROVEMENTS IN COMMUNICATION EFFECTIVENESS AND, CONSEQUENTLY, THE COOPERATIVE PROBLEM SOLVING VENTURE ITSELF. ON-LINE INTERROGATION OF STRUCTURED FILES IS VALUABLE ONLY IN PROPORTION TO A USER'S ABILITY TO GET AT SETS OF RELEVANT FACTS, TO PRECEIVE PERTINENT RELATIONSHIPS AMONG THESE FACTS, AND TO MANIPULATE, REARRANGE, AND COMBINE THEM AS REQUIRED BY THE TASK AT HAND. THIS PAPER IS CONCERNED WITH DEVELOPMENT OF AN APPROACH AND IMPLEMENTATION OF A VEHICLE TO ENABLE USERS TO FORMULATE REQUESTS MORE CONVENIENTLY AND TO GAIN ACCESS TO RELEVANT FACTS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 983 9/2 14/1
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
AN ANALYTICAL COST COMPARISON OF COMPUTER OPERATING SYSTEMS. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
JUN 67 213P ERIKSON,WARREN J. I
REPT. NO. TM-3525
CONTRACT: F19628-67-C-0004

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, PERFORMANCE(ENGINEERING)), (*TIME SHARING, PERFORMANCE(ENGINEERING)), (*COST EFFECTIVENESS, DATA PROCESSING SYSTEMS), MANAGEMENT PLANNING, DECISION MAKING, OPTIMIZATION, MATHEMATICAL MODELS, MAINTENANCE, PROGRAMMING(COMPUTERS) (U)
IDENTIFIERS: BATCH PROCESSING (U)

THE REPORT ATTEMPTS TO ANSWER SOME OF THE QUESTIONS CONCERNING THE ADVANTAGES AND DISADVANTAGES OF TIME-SHARING. TO ACCOMPLISH THIS, THE GENERAL PROBLEM OF EVALUATING COMPUTER SYSTEM PERFORMANCE IS FIRST ADDRESSED. GENERAL SYSTEM CHARACTERISTICS ARE SPECIFIED THAT INCLUDE THE COMPUTER AND ITS OPERATING SYSTEM, AND USERS AND THEIR JOBS. THE MAIN EMPHASIS IS PLACED UPON THE OPERATING SYSTEM; THE EFFECTS OF HAVING DIFFERENT COMPUTERS, USERS, OR JOBS ARE TREATED AS PARAMETERS. THE MOST IMPORTANT EVALUATION CRITERION IS CONSIDERED TO BE COST, WHICH INCLUDES BOTH USER COST AND COMPUTER SYSTEM COST. QUANTITATIVE MODELS ARE DEVELOPED THAT DESCRIBE COMPUTER CENTER USERS, THE PROGRAMS THEY RUN, AND THE DIFFERENT OPERATING SYSTEMS THEY MIGHT USE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-662 027 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE
A LOW-COST OUTPUT TERMINAL FOR TIME-SHARED
COMPUTERS. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
MAR 67 31P ROSENBERG,RONALD C. ;
KENNEDY,DANIEL W. ;HUMPHREY,ROGER A. ;
REPT. NO. MAC-TR-38
CONTRACT: NONR-4102(01)
PROJ: NR-048-189

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, INPUT-OUTPUT DEVICES), (*REMOTE CONTROL SYSTEMS, TIME SHARING), DIGITAL COMPUTERS, REAL TIME, COMMUNICATION SYSTEMS, ANALOG SYSTEMS, DISPLAY SYSTEMS, DATA STORAGE SYSTEMS, WIRING DIAGRAMS (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

A LOW COST REMOTE TERMINAL WHICH PROVIDES OUTPUT IN SWITCH FORM FROM A TIME-SHARED DIGITAL COMPUTER IS DESCRIBED. THE TERMINAL CONSISTS OF A MODIFIED MODEL 35 KSR TELETYPE AND A LOCAL MEMORY UNIT. THE UNIT IS INDEPENDENT OF THE PARTICULAR COMPUTER, AND IS EASY TO TEST AND MAINTAIN. THE STATES OF THE MEMORY CONTROL AND MEMORY WORDS ARE OBSERVABLE DIRECTLY BY INDICATOR LIGHTS. AN APPLICATION OF THE MEMORY TO THE AUTOMATIC SET-UP AND CONTROL OF AN ANALOG COMPUTATION ARE DISPLAYED ON AN OSCILLOSCOPE; THIS MAKES POSSIBLE, FOR EXAMPLE, THE RAPID DISPLAY OF TIME RESPONSE OF LINEAR SYSTEMS, UNDER DIGITAL PROGRAM CONTROL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-662 225 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE
INCREMENTAL SIMULATION ON A TIME-SHARED
COMPUTER. (U)
DESCRIPTIVE NOTE: DOCTORAL THESIS,
67 253P JONES,MALCOLM M. I
REPT. NO. MAC-TR-48
CONTRACT: NONR-4102(01)
PROJ: MR-048-189, RR-003-09-01

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, COMPUTERS),
(*SIMULATION, COMPUTERS), PROGRAMMING
LANGUAGES, REAL TIME, THESES, DISPLAY SYSTEMS (U)
IDENTIFIERS: ON-LINE SYSTEMS, LIST PROCESSING (U)

THE THESIS DESCRIBES A SYSTEM WHICH ALLOWS SIMULATION MODELS TO BE BUILT AND TESTED INCREMENTALLY. IT IS CALLED OPS-4 AND IS SPECIFICALLY DESIGNED TO OPERATE IN THE ENVIRONMENT OF THE MULTICS SYSTEM. IT REPRESENTS A MAJOR EXPANSION AND IMPROVEMENT OF THE OPS-3 SYSTEM IMPLEMENTED IN CTSS AND ALSO INCLUDES MANY FEATURES ADAPTED FROM OTHER CURRENT SIMULATION SYSTEMS. THE PL/I LANGUAGE, AUGMENTED BY MANY ADDITIONAL STATEMENTS AND NEW DATA OBJECTS, PROVIDES THE BASIS FOR DEFINING MODELS IN OPS-4. A LIST OF DESIRABLE FEATURES FOR AN INCREMENTAL SIMULATION SYSTEM IS PRESENTED AND IT IS SHOWN HOW OPS-4 INCORPORATES THESE FEATURES, WHEREAS OTHER CURRENT SIMULATION SYSTEMS SATISFY ONLY SOME OF THEM AND ARE NOT SUITABLE FOR USE IN TIME-SHARED ENVIRONMENT. A SIMPLIFIED MODEL OF PAGE AND SEGMENT FAULT HANDLING IN MULTICS ILLUSTRATES SOME OF THE FEATURES OPS-4 PROVIDES TO ALLOW THE USER TO CONTINUOUSLY INTERACT WITH A MODEL DURING ITS CONSTRUCTION, TESTING AND RUNNING PHASES. IT ALSO ILLUSTRATES HOW THE USER HIMSELF MAY PORTRAY PORTIONS OF A MODEL THAT ARE NOT YET DEFINED. (AUTHOR) (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AD0396

AD-663 198 9/2 5/11 5/8
MASSACHUSETTS INST OF TECH CAMBRIDGE
THE COMPUTER UTILITY AND THE COMMUNITY. (U)
67 9P FANO,R. M. I
CONTRACT: NONR-4102(01)

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN IEEE INTERNATIONAL CONVENTION RECORD, PT. 12 P30-7 1967.
SUPPLEMENTARY NOTE: REPORT ON PROJECT MAC.

DESCRIPTORS: (*COMPUTERS, *SOCIOLOGY), (*TIME SHARING, STATE-OF-THE-ART REVIEWS), PROGRAMMING(COMPUTERS), MAN-MACHINE SYSTEMS, COSTS, MANAGEMENT PLANNING, DATA PROCESSING SYSTEMS (U)
IDENTIFIERS: COMPATIBLE TIME-SHARING SYSTEM, MAC PROJECT, PRIVACY (U)

THE REPORT CONSIDERS THE FOLLOWING TERMS: (1) THE STATE OF THE ART IN TIME SHARING; (2) COMPUTERS AS ASSISTANTS TO THE INDIVIDUAL; AND, (3) SOCIAL IMPLICATIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-663 525 9/5 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS
A PROGRAM FOR ON-LINE ANALYSIS OF NONLINEAR ELECTRONIC CIRCUITS, (U)
67 6P KATZENELSON,JACOB ;
EVANS,DAVID S. ;LEE,HARRY B. ;
CONTRACT: DA-36-039-AMC-03200(E), NSG-496
PROJ: DSR-6152, DSR-9442

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN IEEE INTERNATIONAL CONVENTION RECORD PT. 5 P89-94 1967.
SUPPLEMENTARY NOTE: RESEARCH SUPPORTED IN PART BY AIR FORCE, ARPA, AND NONR.

DESCRIPTORS: (*ELECTRICAL NETWORKS, ANALYSIS), DATA PROCESSING SYSTEMS, TIME SHARING, COSTS, NONLINEAR SYSTEMS, REMOTE CONTROL SYSTEMS, PROGRAMMING(COMPUTERS), DISPLAY SYSTEMS, INPUT-OUTPUT DEVICES (U)
IDENTIFIERS: COMPATIBLE TIME-SHARING SYSTEM, ON-LINE SYSTEMS, AEDNET, BATCH PROCESSING (U)

USERS HAVE FOUND THAT AEDNET PROGRAM TO BE ATTRACTIVE BECAUSE OF THE EASE WITH WHICH IT CAN BE USED, THE SPEED OF RESPONSE, AND THE FACT THAT A USER NEED NOT SPECIFY THE COURSE OF HIS ANALYSIS AT THE OUTSET. THE COST OF TERMINAL HARDWARE AND PROGRAM DEVELOPMENT PRESENTLY IS HIGH. HOWEVER, COSTS SHOULD BE GREATLY REDUCED WHEN ON-LINE COMPUTATIONAL FACILITIES BECOME COMMERCIALLY AVAILABLE AND USERS COOPERATE IN PROGRAM DEVELOPMENT. THUS IT APPEARS LIKELY THAT ON-LINE CIRCUIT ANALYSIS PROGRAMS WILL FIND EXTENSIVE USE IN BOTH INDUSTRY AND EDUCATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-664 039 15/5 9/2
RAND CORP SANTA MONICA CALIF
COMBAT -- A SERIES OF ON-LINE COMPUTER PROGRAMS FOR FORCE COST ANALYSIS, (U)
DEC 67 28P TENG,C. ITENZER,A. J. I
REPT. NO. P-3646

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE 1967 COMPUTER SUMMER WORKSHOP SPONSORED BY THE INDUSTRIAL COLLEGE OF THE ARMED FORCES AND THE UNITED STATES MILITARY ACADEMY, WEST POINT, N. Y., JUL 20 1967.

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, ARMED FORCES OPERATIONS), (*ARMED FORCES OPERATIONS, COST EFFECTIVENESS), COSTS, COMPUTER PROGRAMS, DATA PROCESSING SYSTEMS, MILITARY REQUIREMENTS, DECISION MAKING, EFFECTIVENESS, MATHEMATICAL MODELS, ITERATIVE METHODS (U)
IDENTIFIERS: ON-LINE SYSTEMS, COMBAT(COST ORIENTED MODELS BUILT TO ANALYZE TRADE-OFFS), TRADE OFFS (U)

THE REPORT DESCRIBES A NEW FORCE STRUCTURE COST-ESTIMATING MODEL CALLED COMBAT. IT IS PROGRAMMED FOR AN ON-LINE COMPUTER SYSTEM, AND DESIGNED WITH THE WAR GAMING ACTIVITY IN MIND. COMBAT STANDS FOR COST ORIENTED MODELS BUILT TO ANALYZE TRADE-OFFS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-664 673 9/2 17/2
MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS LAB
A LOW-COST GRAPHIC DISPLAY FOR A COMPUTER TIME-SHARING CONSOLE. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
JUL 67 32P STOTZ,ROBERT H. ;
CHEEK,THOMAS B. ;
REPT. NO. ESL-TM-316
CONTRACT: NONR-4102(01)
PROJ: DSR-79474

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, *TIME SHARING), (*INPUT-OUTPUT DEVICES, REMOTE CONTROL SYSTEMS), (*GRAPHICS, DISPLAY SYSTEMS), TELETYPE SYSTEMS, TYPEWRITERS, SYMBOLS, EFFICIENCY, COSTS, DATA TRANSMISSION SYSTEMS, TELEPHONE COMMUNICATION SYSTEMS, DATA STORAGE SYSTEMS, LOGIC CIRCUITS, MAN-MACHINE SYSTEMS (U)
IDENTIFIERS: ALPHA-NUMERIC SYMBOLS, KEYBOARDS, MAC PROJECT, TELETYPEWRITERS (U)

THE ADVENT OF TIME-SHARED COMPUTER SYSTEMS HAS CREATED A NEED FOR A FLEXIBLE AND RELATIVELY LOW-COST COMMUNICATION TERMINAL FOR REMOTE COMPUTER ACCESS. MOST TIME-SHARED SYSTEMS NOW USE MECHANICAL TELETYPEWRITERS WHICH ARE SLOW AND UNABLE TO PRESENT GRAPHIC DISPLAYS--A SERIOUS LIMITATION IN MANY SOPHISTICATED COMPUTER APPLICATIONS. THE BEST CANDIDATE FOR A TELETYPEWRITER REPLACEMENT APPEARS TO BE A CRT CONSOLE WITH AN ALPHANUMERIC KEYBOARD INPUT WHICH CAN CONNECT AS A 'STAND ALONE' UNIT TO A STANDARD TELEPHONE LINE. THE UNIT USES A DIRECT-VIEW STORAGE TUBE (DVST) FOR A DISPLAY SCREEN AND CONTAINS A VECTOR GENERATOR AND A SYMBOL GENERATOR FOR THE FULL ASCII SYMBOL SET. IT CAN CONNECT TO A CENTRAL COMPUTER VIA A 1200-2400 BAUD DATAPHONE LINE. A MANUALLY-CONTROLLED ELECTRONIC CURSOR FOR GRAPHICAL INPUT TO THE COMPUTER CAN ALSO BE ADDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 443 9/2 5/5
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS
HUMAN FACTORS AND THE DESIGN OF TIME SHARING COMPUTER SYSTEMS. (U)
NOV 67 25P NICKERSON,R. S. IELKIND,J.
I. ICARBONELL,J. R. I
REPT. NO. SCIENTIFIC-2
CONTRACT: F19628-68-C-0125
PROJ: AF-8668
TASK: 866800
MONITOR: AFCRL 68-0054

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO SCIENTIFIC REPT. NO. 3, AD-666 065.

DESCRIPTORS: (*TIME SHARING, HUMAN ENGINEERING), DIGITAL COMPUTERS, MAN-MACHINE SYSTEMS, PROGRAMMING LANGUAGES, ALGORITHMS, OPTIMIZATION, COSTS (U)
IDENTIFIERS: TRADEOFFS (U)

THE ADVENT OF COMPUTER TIME SHARING POSES AN EXTRAORDINARY CHALLENGE TO HUMAN FACTORS RESEARCH DURING THE NEXT DECADE. BEFORE TIME SHARING, TWO FACTS COMBINED TO DE-EMPHASIZE THE IMPORTANCE OF HUMAN FACTORS CONSIDERATIONS IN THE DESIGN OF COMPUTER SYSTEMS: (1) THE COST OF THE COMPUTER'S TIME WAS EXORBITANTLY HIGH RELATIVE TO THE COST OF USERS' TIME, AND (2) THE USERS CONSTITUTED A SELECT, HIGHLY SKILLED AND HIGHLY MOTIVATED GROUP OF SPECIALISTS. TWO OF THE PROMISES OF TIME SHARING, HOWEVER, ARE (1) A DRASTIC REDUCTION IN THE COST OF COMPUTER TIME TO THE INDIVIDUAL USER, AND (2) THE LARGE SCALE AVAILABILITY OF COMPUTER FACILITIES TO INDIVIDUALS UNTRAINED IN ANY AREAS OF COMPUTER TECHNOLOGY. HUMAN FACTORS CONSIDERATIONS THEN BECOME IMPORTANT BOTH FOR ECONOMIC AND PSYCHOLOGICAL REASONS. THIS PAPER BRIEFLY NOTES WHAT A FEW OF THESE CONSIDERATIONS ARE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 556 5/2
FRANKFORD ARSENAL PHILADELPHIA PA
INFORMATION RETRIEVAL. A CRITICAL VIEW. (U)
67 294P SCHECTER,GEORGE I

UNCLASSIFIED REPORT
AVAILABILITY: HARD COPY AVAILABLE FROM THOMPSON BOOK STORE, 14TH AND F ST. N. W., WASHINGTON, D. C. 20004, $11.00.
SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE ANNUAL COLLOQUIUM ON INFORMATION RETRIEVAL (3RD), MAY 12-13, 1966, PHILADELPHIA, PA.

DESCRIPTORS: (*INFORMATION RETRIEVAL, REVIEWS), COMPUTERS, BIBLIOGRAPHIES, SEARCH THEORY, SUBJECT INDEXING, CHEMISTRY, PSYCHOLOGY, DATA PROCESSING SYSTEMS, SYMPOSIA (U)
IDENTIFIERS: ON-LINE SYSTEMS, INFORMATION SYSTEMS (U)

CONTENTS: MOVING CONGRESS INTO THE AGE OF THE COMPUTER; INFORMATION SYSTEM NETWORKS--LETS PROFIT FROM WHAT WE KNOW; THE BOLD (BIBLIOGRAPHIC ON-LINE DISPLAY) SYSTEM; THE DESIGN AND TESTING OF A FULLY AUTOMATIC INDEXING-SEARCHING SYSTEM FOR DOCUMENTS CONSISTING OF EXPOSITORY TEXT; THE TIP RETRIEVAL SYSTEM AT MIT; A LIST-STRUCTURED CHEMICAL INFORMATION RETRIEVAL SYSTEM; PERFORMANCE OF IR SYSTEMS; PSYCHOLOGY AND INFORMATION RETRIEVAL; USER APPRAISAL OF AN INFORMATION SYSTEM AND SERVICES THROUGH A PROGRAM OF JOINT APPLIED RESEARCH; INFOL: A GENERALIZED LANGUAGE FOR INFORMATION STORAGE AND RETRIEVAL APPLICATIONS; GETTING IT OUT OF OUR SYSTEM; RELATIONAL DATA FILE I: DESIGN PHILOSOPHY; RELATIONAL DATA FILE II: IMPLEMENTATION; THE SOLAR SYSTEM I: A GENERAL METHOD FOR ORGANIZING AND SEARCHING FILES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 666 9/2
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS
ON MAN-COMPUTER INTERACTION: A MODEL AND SOME
RELATED ISSUES. (U)
SEP 67 42P CARBONELL,JAIME R. ;
REPT. NO. SCIENTIFIC-1, BBN-1593
CONTRACT: F19628-68-C-0125, ARPA ORDER-627
PROJ: 8668
TASK: 866801
MONITOR: AFCRL 68-0053

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERS, MAN-MACHINE SYSTEMS),
BEHAVIOR, TIME SHARING, INTERACTIONS, COSTS,
DECISION THEORY, PROGRAMMING(COMPUTERS),
MATHEMATICAL MODELS (U)
IDENTIFIERS: ON-LINE SYSTEMS,
DEBUGGING(COMPUTERS), OPTIMAL CONTROL THEORY (U)

A SURVEY OF THE LITERATURE RELATED TO MAN-COMPUTER INTERACTION REVEALS THE MANY ASPECTS OF THIS PROBLEM, WHICH APPEARS TO BE IN THE CROSSROADS AMONG SUCH DIVERSE FIELDS AS COMPUTER LANGUAGES, COMPUTER SYSTEMS OPERATIONAL CHARACTERISTICS, CONTROL THEORY, DECISION THEORY, INFORMATION THEORY, APPLIED PSYCHOLOGY, COMPUTER DISPLAY AND INTERFACE ENGINEERING, ETC. IN THIS PAPER WE HAVE CHOSEN TO PRESENT THE ON-LINE INTERACTION FROM AN INFORMATION AND DECISION POINT OF VIEW. A MODEL IS GIVEN OF THE CASE IN WHICH A HUMAN OPERATOR IS ENGAGED ON-LINE IN THE SOLUTION OF A PROBLEM LIKE DEBUGGING A PROGRAM, TESTING A MODEL IN A SCIENTIFIC APPLICATION, OR PERFORMING A LIBRARY SEARCH. IN THIS MODEL THE HUMAN OPERATOR IS CONSIDERED TO SEEK TO MINIMIZE OVERALL COST. THIS COST IS OBTAINED BY ADDING THE OPERATIONAL COST OF BOTH MAN AND COMPUTER TO A REMNANT TERMINAL COST ORIGINATED BY THE REMAINING UNCERTAINTY. THIS ANALYSIS, PERFORMED FOR EACH OF A SET OF POSSIBLE ALTERNATIVES FOR ACTION, MAY LEAD TO SELECT AND EXECUTE ONE OF THEM, TO TERMINATE THE PROCESS, OR TO RE-EVALUATE THE POSSIBLE ALTERNATIVES AND/OR HYPOTHESES IN A SEARCH FOR NEW ONES. SOME PRACTICAL APPLICATIONS IN TERMS OF RESPONSE TIME AND OTHER CHARACTERISTICS OF A COMPUTER UTILITY ARE PRESENTED, AS WELL AS SOME THEORETICAL IMPLICATIONS FROM AN INFORMATIONAL POINT OF VIEW. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 730 9/2
CARNEGIE INST OF TECH PITTSBURGH PA
TIME SHARING. PART ONE. THE FUNDAMENTALS OF TIME SHARING. PART TWO. AN EVALUATION OF COMMERCIAL TIME SHARING COMPUTERS. PART THREE. OPERATIONAL MANAGEMENT OF TIME SHARING SYSTEMS. (U)
DESCRIPTIVE NOTE: DATA PROCESSING MONOGRAPH SERIES.
67 130P BELL,C. GORDON (GOLD,M. M. (STEADRY,A. C. (LINDE,RICHARD R. (CHANEY,PAUL E. (
CONTRACT: NONR-760(24), SD-146

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: RESEARCH SUPPORTED IN PART BY AIR FORCE SYSTEMS COMMAND. PREPARED IN COOPERATION WITH MIT. AND SYSTEM DEVELOPMENT CORPORATION.

DESCRIPTORS: (*TIME SHARING, STATE-OF-THE-ART REVIEWS), DATA STORAGE SYSTEMS, INPUT-OUTPUT DEVICES, PROGRAMMING(COMPUTERS), REMOTE CONTROL SYSTEMS, DIGITAL COMPUTERS, REAL TIME, OPERATION, SCHEDULING, ECONOMICS, MANAGEMENT PLANNING, CORRELATION TECHNIQUES, MULTIPLE OPERATION (U)
IDENTIFIERS: ON-LINE SYSTEMS, BATCH PROCESSING, PRIVACY(COMPUTERS) (U)

CONTENTS: THE FUNDAMENTALS OF TIME SHARING; AN EVALUATION OF COMMERCIAL TIME SHARING COMPUTERS; OPERATIONAL MANAGEMENT OF TIME SHARING SYSTEMS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 633 9/2
CALIFORNIA UNIV BERKELEY
A FACILITY FOR EXPERIMENTATION IN MAN-MACHINE INTERACTION, (U)
JAN 66 11P LICHTENBERGER,W. W. (
PIRTLE,M. W. (
REPT. NO. P-3
CONTRACT: SD-185

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, TIME SHARING), (*TIME SHARING, DIGITAL COMPUTERS), (*PROGRAMMING(COMPUTERS), MULTIPLE OPERATION), MAN-MACHINE SYSTEMS, REMOTE CONTROL SYSTEMS, DATA STORAGE SYSTEMS, TELETYPE SYSTEMS (U)
IDENTIFIERS: ON-LINE SYSTEMS, MULTIPROGRAMMING (U)

THE TIME-SHARING SYSTEM INVOLVING MEMORY RELABELING, COMMON ROUTINES, AND DUPLEX TELETYPE OPERATION HAS BEEN IN OPERATION SINCE APRIL, 1965. THE SYSTEM IS HIGHLY FLEXIBLE AND CAN PROVIDE A RESPONSE TIME OF LESS THAN ONE SECOND. MEMORY RELABELING IS ACCOMPLISHED WITH NO INCREASE IN ACCESS TIME. THE NUMBER OF PROCESSOR MODES IS SMALL (TWO), AND MODE TRANSITIONS ARE DONE IN SUCH A WAY AS TO ENABLE INTERRUPT AND USER-CALLED SYSTEM ROUTINES TO BE INDEPENDENT OF MODE. THE USER MACHINE IS CLEAN AND WELL DEFINED. INPUT/OUTPUT IS SIMPLER, MORE FOOLPROOF, AND DEVICE-INDEPENDENT. THE USER IS GIVEN A VARIETY OF OTHER SERVICES RANGING FROM GENERALIZED FILE-HANDLING CAPABILITY TO STRING PROCESSING TO ASSEMBLERS, COMPLIERS, DEBUGGERS, AND EDITORS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 634 9/2
CALIFORNIA UNIV BERKELEY
REFERENCE MANUAL TIME-SHARING SYSTEM. (U)
DESCRIPTIVE NOTE: REVISED ED.,
NOV 67 99P DEUTSCH,L. PETER ;
DURHAM,LARRY ;LAMPSON,BUTLER W. ;
REPT. NO. R-21

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, TIME SHARING), (*PROGRAMMING(COMPUTERS), MULTIPLE OPERATION), (*TIME SHARING, INSTRUCTION MANUALS), SCHEDULING, TELETYPE SYSTEMS, REMOTE CONTROL SYSTEMS, DATA STORAGE SYSTEMS (U)
IDENTIFIERS: FLOATING-POINT OPERATION, ON-LINE SYSTEMS (U)

THE BERKELEY TIME-SHARING SYSTEM IS DIVIDED INTO THREE MAJOR PARTS: THE MONITOR, THE EXECUTIVE, AND THE SUBSYSTEMS. ONLY THE FIRST TWO OF THESE ARE DISCUSSED IN DETAIL IN THIS MANUAL. THE MANUAL ATTEMPTS TO DESCRIBE EXHAUSTIVELY ALL THE FEATURES OF THE MONITOR AND IN ADDITION TO GIVE A NUMBER OF IMPLEMENTATION DETAILS. IT ALSO DESCRIBES THOSE FEATURES OF THE EXECUTIVE WHICH CAN BE INVOKED BY A PROGRAM. THE WORD MONITOR IS USED TO REFER TO THAT PORTION OF THE SYSTEM WHICH IS CONCERNED WITH SCHEDULING, INPUT-OUTPUT, INTERRUPT PROCESSING, MEMORY ALLOCATION AND SWAPPING, AND THE CONTROL OF ACTIVE PROGRAMS. THE EXECUTIVE IS CONCERNED WITH THE CONTROL OF THE DIRECTORY OF SYMBOLIC FILE NAMES AND BACKUP STORAGE FOR THESE FILES, AND VARIOUS MISCELLANEOUS MATTERS. OTHER PARTS OF THE EXECUTIVE HANDLE THE COMMAND LANGUAGE BY WHICH THE USER CONTROLS THE SYSTEM FROM HIS TELETYPE, THE IDENTIFICATION OF USERS AND SPECIFICATION OF THE LIMITS OF THEIR ACCESS TO THE SYSTEM. THESE SUBJECTS ARE DISCUSSED IN THE EXECUTIVE REFERENCE MANUAL, AD-667 635. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 635 9/2
CALIFORNIA UNIV BERKELEY
REFERENCE MANUAL FOR THE TIME-SHARING EXECUTIVE. (U)
JAN 68 268 DURHAM,L. (ETHERTON,M. I
REPT. NO. R-22
CONTRACT: SD-185

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, TIME SHARING), (*PROGRAMMING(COMPUTERS), MULTIPLE OPERATION), (*TIME SHARING, INSTRUCTION MANUALS), TELETYPE SYSTEMS, REMOTE CONTROL SYSTEMS, PROGRAMMING LANGUAGES, INPUT-OUTPUT DEVICES (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE PROJECT GENIE OPERATING SYSTEM IS A MEDIUM SCALE MULTI-ACCESS COMPUTATIONAL SYSTEM WHICH IMPLEMENTS A POWERFUL AND COMPLEX USER MACHINE. IT IS THE ROLE OF THE COMMAND LANGUAGE (HERE CALLED THE EXECUTIVE) TO PROVIDE SOME TOOLS TO CONTROL THIS USER MACHINE, AND TO PROVIDE THOSE SERVICES WHICH USERS HAVE COME TO EXPECT OF CONVERSATIONAL SYSTEMS. THIS DOCUMENT DESCRIBES THE SYSTEM COMMAND LANGUAGE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 659 9/2
CALIFORNIA UNIV BERKELEY
A USER MACHINE IN A TIME-SHARING SYSTEM. (U)
DESCRIPTIVE NOTE: REVISED ED.,
AUG 66 12P LAMPSON,B. W. ;
LICHTENBERGER,W. W. ;PIRTLE,M. W. ;
CONTRACT: SD-185

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN PROCEEDINGS OF THE IEEE, V54 N12 P1766-74 1966.
SUPPLEMENTARY NOTE: REPORT ON PROJ. GENIE. REVISION OF REPORT DATED 12 JUL 66.

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, *TIME SHARING), (*PROGRAMMING(COMPUTERS), MULTIPLE OPERATION), DATA STORAGE SYSTEMS, REMOTE CONTROL SYSTEMS, INPUT-OUTPUT DEVICES, MAN-MACHINE SYSTEMS (U)
IDENTIFIERS: GENIE PROJECT, MULTIPROCESSING, ON-LINE SYSTEMS (U)

THE PAPER DESCRIBES THE DESIGN OF THE COMPUTER SEEN BY A MACHINE-LANGUAGE PROGRAMMER IN A TIME-SHARING SYSTEM DEVELOPED AT THE UNIVERSITY OF CALIFORNIA AT BERKELEY. SOME OF THE INSTRUCTIONS IN THIS MACHINE ARE EXECUTED BY THE HARDWARE, AND SOME ARE IMPLEMENTED BY SOFTWARE. THE USER, HOWEVER, THINKS OF THEM ALL AS PART OF HIS MACHINE, A MACHINE HAVING EXTENSIVE AND UNUSUAL CAPABILITIES, MANY OF WHICH MIGHT BE PART OF THE HARDWARE OF A (CONSIDERABLY MORE EXPENSIVE) COMPUTER. AMONG THE IMPORTANT FEATURES OF THE MACHINE ARE THE ARITHMETIC AND STRING MANIPULATION INSTRUCTION - THE VERY GENERAL MEMORY ALLOCATION AND CONFIGURATION MECHANISM, AND THE MULTIPLE PROCESSES WHICH CAN BE CREATED BY THE PROGRAM. FACILITIES ARE PROVIDED FOR COMMUNICATION AMONG THESE PROCESSES AND FOR THE CONTROL OF EXCEPTIONAL CONDITIONS. THE INPUT-OUTPUT SYSTEM IS CAPABLE OF HANDLING ALL OF THE PERIPHERAL EQUIPMENT IN A UNIFORM AND CONVENIENT MANNER THROUGH FILES HAVING SYMBOLIC NAMES. PROGRAMS CAN ACCESS FILES BELONGING TO A NUMBER OF PEOPLE, BUT EACH PERSON CAN PROTECT HIS OWN FILES FROM UNAUTHORIZED ACCESS BY OTHERS. SOME MENTION IS MADE AT VARIOUS POINTS OF THE TECHNIQUES OF IMPLEMENTATION, BUT THE MAIN EMPHASIS IS ON THE APPEARANCE OF THE USER'S MACHINE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-668 078 9/2 5/2
CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF COMPUTER SCIENCE
STEPS TOWARD A GENERAL PURPOSE TIME-SHARING SYSTEM USING LARGE CAPACITY CORE STORAGE AND TSS/360. (U)
MAR 68 38P FIKES,RICHARD E. ;
LAUER,HUGH C. ;VAREHA,ALBIN L. , JR;
CONTRACT: SD-146
PROJ: AF-9718
MONITOR: AFOSR 68-0763

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE NATIONAL CONFERENCE OF ASSOCIATION FOR COMPUTING MACHINERY, 1968.

DESCRIPTORS: (*DATA STORAGE SYSTEMS, TIME SHARING), INFORMATION RETRIEVAL, PROGRAMMING(COMPUTERS), COSTS, DECISION MAKING, CYBERNETICS, TIME, ALGORITHMS, FLOW CHARTING, CORRELATION TECHNIQUES (U)
IDENTIFIERS: *LARGE CAPACITY CORE STORAGE, TSS(TIME SHARING SYSTEM), *TIME SHARING SYSTEMS (U)

THIS PAPER IS A PROGRESS REPORT OF AN EFFORT AT CARNEGIE-MELLON UNIVERSITY TO DETERMINE HOW A LARGE CAPACITY CORE STORAGE FACILITY (LCS) CAN BE USED TO REDUCE THE DEMAND PAGING OVERHEAD COSTS IN THE IBM SYSTEM/360 TIME SHARING SYSTEM (TSS/360) AND IN SIMILAR GENERAL PURPOSE TIME-SHARING SYSTEMS. A DISCUSSION IS PRESENTED OF HOW THE NUMBER OF PAGING OPERATIONS AND THE COST OF EACH PAGING OPERATION CAN BE REDUCED BY USING LCS AS BOTH A SWAPPING DEVICE AND AN EXTENSION OF EXECUTABLE CORE. TWO PROBLEMS WHICH ARISE ARE CONSIDERED. A NEW ALGORITHM FOR RELEASING CORE IS PRESENTED AND COMPARED WITH TWO EXISTING ALGORITHMS. FINALLY, RESULTS FROM A FEASIBILITY IMPLEMENTATION OF THE IDEAS IN A PRE-RELEASE VERSION OF TSS/360 ARE PRESENTED AS A DEMONSTRATION OF THE VALIDITY OF USING LCS TO REDUCE PAGING OVERHEAD. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-668 084 9/2
CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF COMPUTER SCIENCE
A METHODOLOGY FOR EVALUATING TIME-SHARED COMPUTER SYSTEM USAGE, (U)
AUG 67 151P GOLD,MICHAEL M. I
CONTRACT: SD-146, NONR-4102(01)
PROJ: AF-9718
MONITOR: AFOSR 68-0795

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIGITAL COMPUTERS, *TIME SHARING), MAN-MACHINE SYSTEMS, BEHAVIOR, PERFORMANCE(ENGINEERING), PROGRAMMING(COMPUTERS), PROGRAMMING LANGUAGES, COSTS, TIME, LEARNING, FEEDBACK, PROBLEM SOLVING, QUESTIONNAIRES, DATA PROCESSING SYSTEMS (U)
IDENTIFIERS: METHODOLOGY (U)

THE DEVELOPMENT OF TIME-SHARED COMPUTER SYSTEMS HAS LED TO MAJOR TECHNICAL AND PHILOSOPHICAL CHANGES IN THE COMPUTER FIELD IN THIS DECADE. A LARGE NUMBER OF DESIGNERS, MANUFACTURERES, AND USERS OF SUCH SYSTEMS HAVE EXPENDED GREAT AMOUNTS OF EFFORT IN THE DEVELOPMENT OF THE CAPABILITIES OF THE COMPUTER AND THE MEANS TO USE IT. HOWEVER, LITTLE OR NO EFFORT HAS YET BEEN EXPENDED TO EVALUATE THESE SYSTEMS IN TERMS OF THEIR USEFULNESS FOR PRESENT OR FUTURE CUSTOMERS. THE RESEARCH REPORTED HERE HAS FOCUSED ON THE DEVELOPMENT OF A METHODOLOGY THROUGH WHICH TIME-SHARED COMPUTER SYSTEM USAGE CAN BE EVALUATED. IT IS BASED ON A STUDY OF THE CHARACTERISTICS AND DESIGN OF PRESENT AND PROPOSED COMPUTER SYSTEMS, AS WELL AS RELEVANT BEHAVIORAL THEORY AND RESEARCH. FIVE CATEGORIES OF VARIABLES ARE INCLUDED IN THE RESULTING METHODOLOGY, NAMELY THOSE WHICH ARE MEASURES OF: (1) THE COST OF USING THE SYSTEM; (2) THE PERFORMANCE PRODUCED THROUGH THE USE OF THE COMPUTER SYSTEM; (3) THE SPEED WITH WHICH RESULTS COULD BE PRODUCED; (4) THE AMOUNT OF LEARNING RESULTING FROM THE USE OF THE COMPUTER SYSTEM; AND (5) THE ATTITUDES OF THE USERS OF THE COMPUTER SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-669 308 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
CERTAIN TIMING CHARACTERISTICS OF A MULTIPANEL
CALCULATING SYSTEM (NEKOTORYE VREMENNYE
KHARAKTERISITIKI MNOGOPULTOVOI VYCHISLITELNOI
SYSTEMY). (U)
SEP 67 13P MISHURNAYA,M. V. ;
REPT. NO. FTD-MT-24-232-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF
VYCHISLITELNAYA TEKHNIKA V MASHINOSTROENII (USSR)
P14-20 1965.

DESCRIPTORS: (*DIGITAL COMPUTERS, REMOTE CONTROL
SYSTEMS), TIME SHARING, MULTIPLE OPERATION,
CODING, INPUT-OUTPUT DEVICES, TELEGRAPH SYSTEMS,
USSR (U)
IDENTIFIERS: TRANSLATIONS, DIGITAL DATA
TRANSMISSION, MINSK-2 COMPUTER(USSR) (U)

THE PRESENT PAPER IS A SEQUEL TO ONE ENTITLED
'THE MULTI-TERMINAL COMPUTER' BY THE SAME
AUTHOR. EACH TERMINAL IS AN INPUT/OUTPUT
TELETYPEWRITER LINKED TO A BUFFER SECTION IN THE MAIN
UNIT. AN INTERRUPT SUBROUTINE IN THE COMPUTER IS
INITIATED FROM THE INPUT BUFFER WHEN NEW DATA ARE FED
FROM ONE OF THE TERMINALS OR WHEN THE RESULTS OF
CALCULATIONS ARE TO BE TRANSMITTED BACK TO A
PARTICULAR TERMINAL. THIS SUBROUTINE CONTAINS
PROVISIONS FOR A DELAY AND CERTAIN PRIORITY DECISIONS
TO ALLOW FOR AN ORDERLY PROCESSING OF INFORMATION BY
THE COMPUTER. THE TIME REQUIRED FOR A PROCESSING
OF A PROBLEM ORIGINATING FROM A TERMINAL IS
CALCULATED. THE DELAY TIME FOR THE SIMULTANEOUS
OPERATION OF SEVERAL TERMINALS IS ANALYZED AND THE
APPROPRIATE FORMULAS ARE GIVEN. ALL DERIVED
EXPRESSIONS ARE VALID FOR ANY MULTI-TERMINAL COMPUTER
SYSTEM. THE OPERATION OF AN INSTALLATION IN WHICH
THE I/O TERMINALS ARE ARRANGED IN GROUPS IS
DISCUSSED AND ITS ADVANTAGES ARE POINTED OUT. IN
THIS SYSTEM SEVERAL TERMINALS TIME-SHARE A SINGLE
COMMUNICATION LINE AND A SINGLE SECTION IN THE INPUT
BUFFER. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-669 368 9/2 6/4
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
HAND-PRINTED INPUT FOR ON-LINE SYSTEMS. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
APR 68 24P BERNSTEIN,M. I. I
REPT. NO. TM-3937/000/00
CONTRACT: F19628-67-C-0004, ARPA-AS12-66

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, CHARACTER RECOGNITION), (*PROGRAMMING(COMPUTERS), CHARACTER RECOGNITION), INPUT-OUTPUT DEVICES, MAN-MACHINE SYSTEMS, TIME SHARING, REAL TIME, DIGITAL COMPUTERS, CATHODE RAY TUBE SCREENS, FLOW CHARTING (U)
IDENTIFIERS: ON-LINE SYSTEMS, Q-32 COMPUTER, RAND TABLET (U)

THE DOCUMENT DESCRIBES A PROGRAM FOR RECOGNIZING HAND-PRINTED INFORMATION IN REAL TIME, WHICH PROVIDES ON-LINE COMPUTER USERS WITH A MEANS OF INPUTTING TWO-DIMENSIONAL INFORMATION AS SIMPLY AS WRITING WITH PEN AND PAPER. THE PROGRAM OPERATES UNDER THE TIME-SHARING SYSTEM ON THE Q-32 COMPUTER AT SDC, AND USES A RAND TABLET FOR INPUT AND A CRT DISPLAY (REAR-PROJECTED ON THE TABLET FOR OUTPUT). EACH USER OF THE PROGRAM BUILDS A UNIQUE CHARACTER DICTIONARY, BASED ON SAMPLES OF HIS OWN INPUT CHARACTERS. FOR EACH USER, THE PROGRAM CURRENTLY RECOGNIZES ABOUT 100 DIFFERENT CHARACTERS, WHICH ARE CHOSEN FROM A LARGER ALPHABET BY THE INDIVIDUAL USER. THE DOCUMENT DESCRIBES HOW THE RECOGNITION PROGRAM INTERFACES WITH THE TIME-SHARING SYSTEM; WHAT FUNCTIONS THE PROGRAM PERFORMS IN RECOGNIZING HAND-DRAWN INPUT; AND HOW THE CHARACTER DICTIONARY IS CONSTRUCTED AND TESTED. THE REPORT CONCLUDES BY SUGGESTING THAT THE CHARACTER RECOGNIZER WILL REALIZE ITS GREATEST POTENTIAL BY BEING APPLIED TO PROBLEMS THAT REQUIRE FREE-FORM (RATHER THAN LINEAR KEYBOARD) INPUT. (AUTHOR) (U)

COMPUTER COMPONENTS

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-256 990
ILLINOIS UNIV URBANA DIGITAL COMPUTER LAB
FLOW-GATING (U)
MAR 61 1V GUCKEL,HENRY;KUNIHIRO,TOSHIRO;
CROW,RONALD K.;
REPT. NO. 106
CONTRACT: NONR183415

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *DIGITAL COMPUTERS, *TRANSISTORS, CODING, COMPUTER STORAGE DEVICES, DATA STORAGE SYSTEMS, ELECTRICAL PROPERTIES, FEEDBACK, GATES (CIRCUITS), TRIGGER CIRCUITS (U)

WORK CONCERNS TRANSISTOR SELECTION AND EVALUATION, THE BASIC DESIGN PROBLEM, AND THE EVALUATION OF THE FLOW-GATING MEMORY. THE PROPOSED SYSTEM CONSISTS OF 14 FLOW-GATING FLIPFLOPS, WHICH CONSTITUTE A 1/4 WORD (3 TRANSISTORS PER BIT), THE READ-IN DRIVER (18/14 TRANSISTORS PER BIT), THE READ-OUT DRIVER (10/14 TRANSISTORS PER BIT), AND TERMINATION EQUIPMENT (2/11 TRANSISTORS PER BIT). THE SYSTEM USES FIVE TRANSISTORS PER BIT OF WHICH 12/14 ARE GF45011, 40/77 ARE N-101 AND THE REMAINING PARTS ARE OF THE N-100 TYPE. THE TERMINAL PROPERTIES ARE GIVEN. THE AC BEHAVIOR IS DISCUSSED IN CONSIDERABLE DETAIL. THE READ-IN SPEED, AFTER TOLERANCE CORRECTION, IS LESS THAN 90 NSEC.; THE READ-OUT SPEED IS IN THE VICINITY OF 80 NSEC., WHEN REFERENCED TO THE INPUT OF THE RESPECTIVE DRIVERS. THIS APPARENTLY SATISFIES THE PROPOSED REQUIREMENT OF 150 NSEC. ACCESS TIMES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-257 018
MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS LAB
TUNNEL DIODE CIRCUITS FOR SWITCHING THIN FILM MEMORIES (U)
JAN 61 1V DAVIS,PAUL C.I
REPT. NO. TM100
CONTRACT: AF33 616 5489

UNCLASSIFIED REPORT

DESCRIPTORS: *DIODES, *PULSE GENERATORS, *SWITCHING CIRCUITS, *TRIGGER CIRCUITS, ARSENIDES, CIRCUITS, COMPUTER STORAGE DEVICES, COMPUTERS, DATA STORAGE SYSTEMS, DESIGN, GALLIUM COMPOUNDS, GERMANIUM, MAGNETIC MATERIALS, MATHEMATICAL ANALYSIS, THIN FILMS (STORAGE DEVICES), TRANSMISSION LINES (U)
IDENTIFIERS: THIN FILMS, THIN FILMS ELECTRONICS (M)

TUNNEL-DIODE CIRCUITS ARE INVESTIGATED THEORETICALLY AS A SOURCE OF HIGH-SPEED CURRENT PULSES CAPABLE OF SWITCHING THIN FILM MEMORIES IN THE ORDER OF TENS OF MILLIMICROSECONDS. BREAK-POINT MODELS OF THE CHARACTERISTIC CURVE ARE CONSTRUCTED AND PIECEWISE LINEAR ANALYSIS IS USED TO PREDICT AND EXTRAPOLATE EXPERIMENTAL RESULTS. THREE BASIC CIRCUITS WERE CHOSEN AS DRIVERS FOR VARIOUS LOAD FORMS AND LEVELS. THESE WERE TRIED IN THE LABORATORY AND RESULTS ARE GIVEN. EACH OF THESE CIRCUITS UTILIZED A NOVEL QUICK-RECOVERY FEATURE WHICH WAS RESPONSIBLE FOR ABOUT ONE-HALF TO TWO-THIRDS OF THE SUM OF THE DIODE PEAK CURRENTS NECESSARY FOR A GIVEN LOAD CURRENT. THE RECOVERY TIME WA MADE EQUAL TO THE PULSE WIDTH, WHICH WAS 20 MILLIMICROSECONDS. THE TRIGGERING DELAY TIME WAS APPROXIMATELY ONE-HALF THE PULSE WIDTH FOR ALL THREE CIRCUITS. IT WAS CONCLUDED THAT TUNNEL DIODES CAN BE USED TO DRIVE THIN MAGNETIC FILMS IN STRIP LINES AT THE SPEED DESIRED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-257 189
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
CRYOSAR MEMORY DESIGN (U)
MAY 61 1V JOHNSTON,R.C.I
REPT. NO. 53G 0044
CONTRACT: AF19 604 7400

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, *ELECTRICAL EQUIPMENT, COMPUTERS, DESIGN, ELECTRIC FIELDS, GERMANIUM, IMPURITIES, IONIZATION (U)

THE COMPENSATED CRYOSAR IS A NEGATIVE-RESISTANCE TWO-TERMINAL DEVICE UTILIZING A BULK EFFECT IN GERMANIUM AT LIQUID HELIUM TEMPERATURES. ITS USE IN A COMPUTER MEMORY IS FORESEEN BECAUSE OF ITS BISTABLE NATURE AND ITS EASE OF FABRICATION IN LARGE ARRAYS. HOWEVER, CAREFUL CONSIDERATION OF DEVICE AND CIRCUIT PARAMETERS IS NECESSARY IF A SUCCESSFUL LARGE MEMORY IS TO BE ACHIEVED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-289 229
INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N Y
PROJECT LIGHTNING (U)
NOV 60 IV
CONTRACT: NOBSR77508

UNCLASSIFIED REPORT

DESCRIPTORS: •COMPUTER STORAGE DEVICES, •COMPUTERS, •CRYOGENICS, •DATA PROCESSING SYSTEMS, •DATA STORAGE SYSTEMS, •SWITCHING CIRCUITS, CIRCUITS, DESIGN, MATERIALS, MATHEMATICAL LOGIC, MEASUREMENT, SUPERCONDUCTORS, THERMAL CONDUCTIVITY, THIN FILMS (STORAGE DEVICES), TRIGGER CIRCUITS (U)
IDENTIFIERS: LIGHTNING PROJECT, THIN FILMS, THIN FILMS ELECTRONICS (U)

WORK WAS CONTINUED IN CRYOGENICS AND ASSOCIATED MACHINE ORGANIZATION DEVOTED TO EVALUATING THE FEASIBILITY OF A COMPUTER SYSTEM CAPABLE OF PERFORMING BASIC LOGIC OPERATIONS AT A RATE OF 1000 MC. IT WAS CONCLUDED THAT SUBSTANTIAL IMPROVEMENT IN THE EFFICIENCY OF A KILOMEGACYCLE CRYOTRONIC MACHINE CAN BE OBTAINED BY REDUCING THE PLANAR DIMENSIONS OF THE CIRCUITS AND USING A SUBSTRATE HAVING HIGH THERMAL CONDUCTIVITY. EFFORTS WERE MADE TO FIND SUBSTRATES WHICH CAN BE USED FOR CIRCUITS AND WHICH WILL ALLEVIATE THE HEAT PROBLEM BY INCREASING THE THERMAL CONDUCTIVITY TO THE BATH. A FIRST SET OF RESULTS WAS OBTAINED IN THE MULTIPLEXING STUDY AND PRELIMINARY DATA ON THE EFFECT OF QUEUE LENGTH ARE REPORTED. A PLAN TO DESIGN AND CONSTRUCT A HIGH-SPEED ADDRESSABLE MEMORY WAS PREPARED. THE MODIFICATIONS OF THE CRYOTRON NETWORK SIMULATOR RESULTED IN SIMULATION RESULTS THAT AGREED WITH EXPERIMENTAL RESULTS FOR SLOW CROSSED-FILM CRYOTRON CIRCUITS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-259 376
TEXAS INSTRUMENTS INC DALLAS
SILICON SEMICONDUCTOR SOLID CIRCUITS (U)
MAY 61 1V BROWER,WILLIAMICRAGON,HARVEY)
CONTRACT: AF33 600 42210
MONITOR: ASD IR7 065 V1

UNCLASSIFIED REPORT

DESCRIPTORS: *DIODES, *SEMICONDUCTORS, *TRANSISTORS, ANHYDRIDES, BORATES, BORON, CAPACITORS, CHLORIDES, CIRCUITS, CLEANING, CONTAINERS, DESIGN, DIFFUSION, DIGITAL COMPUTERS, ELECTRICAL PROPERTIES, EVAPORATION, MANUFACTURING METHODS, MEASUREMENT, METHYL RADICALS, OXIDES, PHOSPHORUS, PHOTOENGRAVING, PRINTED CIRCUITS, SILICON, SOLID STATE PHYSICS, SUBMINIATURE ELECTRONIC EQUIPMENT, TEST SETS, THIN FILMS (STORAGE DEVICES), TRIGGER CIRCUITS (U)
IDENTIFIERS: THIN FILMS, THIN FILMS ELECTRONICS (M)

PROCESS TECHNIQUES REQUIRED FOR THE FABRICATION OF SEMICONDUCTOR NETWORKS ARE BEING ESTABLISHED. STUDIES OF SILICON SLICE PREPARATION, DIFFUSION, CONTACT FORMATION, FILM DIELECTRICS AND TEST STRUCTURES ARE DISCUSSED. EQUIPMENT ASSEMBLY TECHNIQUES FOR A SERIAL, DIGITAL COMPUTER ARE INVESTIGATED. (AUTHOR) (U)

DLC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-260 117
COMPUTER TECHNIQUES LAB STANFORD RESEARCH INST MENLO PARK CALIF
FUNDAMENTAL INVESTIGATION OF DIGITAL COMPUTER STORAGE AND ACCESS TECHNIQUES (U)
MAY 61 IV MILLER,S.W.
CONTRACT: AF30 602 2227

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, *DIGITAL COMPUTERS, CAPACITORS, COSTS, DELAY LINES, FERROELECTRICITY, MAGNETIC CORES, MAGNETIC TAPE, NEGATIVE RESISTANCE CIRCUITS, PHOTOGRAPHY, SUPERCONDUCTIVITY, SWITCHING CIRCUITS, THERMOPLASTICS (U)

COMPUTER TECHNIQUES LAB., STANF RD RESEA CH INST., MENLO PARK, CALIF. FUNDAMENTAL INVESTIGATION OF DIGITAL COMPUTER STORAGE AND ACCESS TECHNIQUES. REPT. FOR 1 APR 60-1 APR 61, BY S. W. MILLER. MAY 61, OP. INCL. ILLUS. 112 REFS. (CONTRACT AF 30(602)2227, PROJ. 4027) (RADC TR 61-117A)UNCLASSIFIED REPORT DESCRIPTORS: *DIGITAL COMPUTERS, *MEMORY DEVICES, *DATA STORAGE SYSTEMS, SWITCHING CIRCUITS, MAGNETIC CORES, FERROELECTRICITY, CAPACITORS, NEGATIVE RESISTANCE CIRCUITS, DELAY LINES, PHOTOGRAPHY, UPERCONDUCTIVITY, COSTS, MAGNETIC TAPE, MAGNETIC CORE SWITCHES. OPEN-ENDED TERMS: THERMOPLASTIC RECORDING. THE ARTIFICE OF A CONCEPTUAL MODEL OF A STORAGE UNIT WAS USED IN ORDER TO CLASSIFY THE VARIOUS KINDS OF STORAGE UNITS ACCORDING TO THEIR TERMINAL CHARACTERISTICS. THE IMPORTANT TERMINAL CHARACTERISTICS ARE THE STORAGE CAPACITY, SPEED AND ORDER OF ACCESS, THE OPERATING MODE, AND THE PERMANENCE OF THE STORED DATA. THIS MODEL WAS DISSECTED INTO FOUR FUNDAMENTAL PARTS, AN AGGREGATE OF STORAGE REGISTERS, ACCESS EQUIPMENT FOR SELECTION AND EXCITATION OF THE DESIRED REGISTER THE SENSING EQUIPMENT FOR DETERMINING THE DATA STORED IN THE REGISTER, AND THE ORGANIZATIONAL SCHEME USED FOR THEIR INTERCONNECTION. THE VARIOUS TECHNIQUES FOR ACHIEVING THESE FUNDAMENTAL OPERATIONS, EITHER IN USE OR BEING DEVELOPED, ARE OUTLINED AND DISCUSSED. THE RELATION BETWEEN THE USE OF PARTICULAR TECHNIQUES IN A STORAGE UNIT AND THE POSITION OF THAT STORAGE UNIT ON THE CAPACITY VS SPEED GRAPH IS SHOWN WITH SOME PREDICTIONS FOR IMPROVEMENTS. (AUTHOR) 122 (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-260 118
COMPUTER TECHNIQUES LAB STANFORD RESEARCH INST MENLO PARK CALIF
MAGNETIC CORE ACCESS SWITCHES (U)
MAY 61 1V HAYNES,JOHN L.;MINNICK,ROBERT C.;
CONTRACT: AF30 602 2227

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, *DIGITAL COMPUTERS, ALGEBRA, DESIGN, ELECTRONIC SWITCHES, MAGNETIC CORES, MATHEMATICAL ANALYSIS, MATRIX ALGEBRA, SWITCHING CIRCUITS (U)

A NUMBER OF THE MORE COMMONLY KNOWN MAGNETIC CORE ACESS SWITCHES ARE COMBINED IN A SINGLE ANALYTICAL MODEL. IN ADDITION TO YIELDING AS SPECIAL CASES THE KNOWN ACESS SWITCHES ON WHICH IT IS BASED, THIS MODEL PRODUCES MANY APPARENTLY NEW SWITCHES. RELATIONSHIPS AMONG THE VARIOUS PARAMETERS IN THIS MODEL ARE DEVELOPED IN SUCH A WAY THAT THE DESIGNER MAY CHOOSE THE NUMBER OF DRIVERS, THE LOAD-SHARING FACTOR, THE NUMBER OF TURNS OF WIRE PER SWITCH CORE AND THE MAGNITUDE OF THE MAXIMUM DISTURBING MAGNETOMOTIVE FORCE WITHIN CERTAIN LIMITS. AS FURTHER AIDS TO THE DESIGNER, A NUMBER OF TABLES ARE INCLUDED AND ALGORITHMS ARE GIVEN WHICH MAY BE USED TO MATCH THE SWITCH PROPERTIES CLOSELY TO THE DESIGN REQUIREMENTS. SEVERAL METHODS ARE DEVELOPED FOR ECONOMIZING ON THE NUMBER OF DRIVERS USED IN SWITCHES, AND CERTAIN SPECIAL ACCESS SWITCHES ARE TREATED. THE CURRENT KNOWLEDGE IS REVIEWED ON A FAIRLY RECENT AND IMPORTANT CLASS OF ACCESS SWITCHES, KNOWN AS LOAD-SHARING ZERO-NOISE SWITCHES. THESE SWITCHES ARE COMPARED WITH ONE ANOTHER, AND A FUNDAMENTAL THEOREM IS PROVED THAT SUCH SWITCHES CAN HAVE NO MORE OUTPUTS THAN INPUTS. SEVERAL NEW CLASSES OF LOAD-SHARING ZERO-NOISE SWITCHES ARE DEVELOPED AND ANALYZED; IN PARTICULAR, SWITCHES ARE DEVELOPED WHICH FOR A GIVEN NUMBER OF OUTPUTS ALLOW MORE FLEXIBILITY IN THE CHOICE OF THE LOAD-SHARING FACTOR THAN FORMERLY WAS THE CASE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-260 292
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC PRODUCTS
PROJECT LIGHTNING (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *COMPUTER STORAGE DEVICES, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *DIGITAL COMPUTERS, *DIODES, COMPUTERS, DESIGN, INSTRUMENTATION, MATERIALS, MATHEMATICAL LOGIC, RECTIFIERS, SEMICONDUCTORS, SWITCHING CIRCUITS (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

CONTENTS: MILLIMICROSECOND LOGIC CIRCUITS CLOCK POWERED CIRCUITS BASEBAND CIRCUITS MEMORIES FABRICATION MEMORY TEST MACHINE DESIGN SYSTEM STUDIES INSTRUMENTATION (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-260 463
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC PRODUCTS
PROJECT LIGHTNING (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *COMPUTERS, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *STORAGE TUBES, *TRIODES, CIRCUITS, DESIGN, DIODES, ELECTRON TUBES, FERRITES, GALLIUM COMPOUNDS, GERMANIUM, MATHEMATICAL ANALYSIS, MATHEMATICAL LOGIC, RECTIFIERS, SEMICONDUCTORS, SOLID STATE PHYSICS, TRANSISTORS (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

THIS SUPPLEMENTAL REPORT PRESENTS MATERIAL NOT COVERED IN THE MAIN COVER OF IRR-8A. THE MAIN TOPICS ARE: EXPLORATORY RESEARCH, DEVICE RESEARCH AND PRODUCTION, AND CERTAIN ADDITIONS NOT COMPLETED IN TIME FOR INCLUSION IN THE MAIN REPORT. THESE COVER AREAS IN CIRCUIT AND MEMORY DEVELOPMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-260 471
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC PRODUCTS
PROJECT LIGHTNING (U)
1V WARBURTON,PETER)

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *COMPUTERS, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, CIRCUITS, DESIGN, MATHEMATICAL LOGIC (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

CONTENTS: THE PREMISE OF PROJECT LIGHTNING SYSTEM STUDIES INPUT-OUTPUT COMPUTERS A SMALL 48-BIT COMPUTER SYSTEM DESIGN OF A LARGE 48-BIT COMPUTER (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000396

AD-260 782
STANFORD UNIV CALIF STANFORD ELECTRONICS LABS
THE SELECTION PROBLEM FOR MINIMAL-STATE SEQUENTIAL CIRCUITS (U)
IV DAVIDSON,W.H.)

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *SEQUENCE SWITCHES, *SWITCHING CIRCUITS, DIGITAL SYSTEMS, EQUATIONS, MATHEMATICAL LOGIC, MATRIX ALGEBRA, STATISTICAL ANALYSIS, THEORY (U)

A TECHNIQUE IS DISCUSSED THAT WILL SELECT FROM THE SET OF MINIMAL-STATE CIRCUITS THOSE WHICH WILL HAVE THE LOWEST EXPECTED LOGIC COST. THE RELATION BETWEEN INFORMATION CONTENT AND THE EXPECTED COST OF THE LOGIC IS CLEARLY DEMONSTRATED FOR THE CASES DISCUSSED. THIS INDICATES THAT IF CIRCUITS CAN BE DESIGNED THAT HAVE SMALL INFORMATION CONTENTS, THEY WILL ALSO HAVE INEXPENSIVE ASSOCIATED LOGIC. IT MAY BE POSSIBLE TO FIND DESIGN PROCEDURES THAT WILL GENERATE CIRCUITS WITH SMALL INFORMATION CONTENTS AND THUS WITH LOW-COST LOGIC. ALSO, IT SEEMS REASONABLE TO EXPECT THAT A RELATION SHOULD EXIST BETWEEN AN APPROPRIATELY DEFINED INFORMATION CONTENT FOR THE CIRCUIT'S INPUT-OUTPUT SEQUENCES AND ITS INFORMATION CONTENT. (AUTHOR O (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00394

AD-261 27;
RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC PRODUCTS
MICRO-MODULE PRODUCTION PROGRAM (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *MANUFACTURING METHODS, *SUBMINIATURE ELECTRONIC EQUIPMENT, CERAMIC CAPACITORS, COMMUNICATION EQUIPMENT, COMPUTERS, CONTAINERS, CRYSTAL HOLDERS, CRYSTALS, DESIGN, DIODES, MATERIALS, PACKAGED CIRCUITS, PRODUCTION, QUARTZ, RELIABILITY, RESISTORS, SEMICONDUCTORS, TESTS, THIN FILMS (STORAGE DEVICES), TRANSISTORS (U)
IDENTIFIERS: AN/PRC-81, AN/TYK-9, THIN FILMS, THIN FILMS ELECTRONICS (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-263 109
SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS DIV
PROJECT LIGHTNING. VOLUME II (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *DIGITAL COMPUTERS; *ELECTRODEPOSITION, *MAGNETIC TAPE; *PROCESSING, COMPUTER LOGIC, COMPUTER STORAGE DEVICES, DATA PROCESSING SYSTEMS, DATA STORAGE SYSTEMS, FERROMAGNETIC MATERIALS, FILMS, GLASS (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

RESEARCH TO SERVE AS THE BASIS FOR THE EVOLUTION OF AN ULTRAHIGH-SPEED DATA-PROCESSING SYSTEM IS SUMMARIZED. THE EFFECTS OF RATE OF DEPOSITION, GLASS CLEANING TECHNIQUES, AND DIFFERENT TYPES OF GLASS SUBSTRATES ON THE MAGNETIC PROPERTIES OF VACUUM-DEPOSITED PERMALLOY FILMS WERE STUDIED. RATES OF DEPOSITION RANGING FROM 10 A/SEC TO 200 A/SEC WERE FOUND TO HAVE NO EFFECT ON H SUB C AND H SUB K WITHIN THE ERROR OF THE EXPERIMENT. THE MAGNETOELASTIC STRAIN COEFFICIENT DECREASED SLIGHTLY WITH INCREASING RATE IN THIS RANGE. OPTIMUM METHODS OF MAKING ELECTRO-DEPOSITED PERMALLOY FILMS WERE INVESTIGATED. METHODS WERE DEVELOPED TO REDUCE THE COMPOSITION VARIATION. MAGNETIC PROPERTIES OF THE PERMALLOY FILMS MADE ARE RELATIVELY POOR. BOTH THE ANISOTROPY FIELD AND THE COERCIVE FIELD ARE RELATIVELY LARGE, AND MAGNETIC PROPERTIES EXHIBIT A LARGE RANGE OVER AN ARRAY. OTHER INVESTIGATION CONCERNED: APPARATUS AND INSTRUMENTATION, MEASUREMENTS, SWITCHING AND RESONANCE STUDIES, MATHEMATICS AND LOGIC RESEARCH, AND THE LIGHTNING TEST MACHINE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-243 110
SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS DIV
PROJECT LIGHTNING. VOLUME I (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, *MAGNETIC PROPERTIES, COMPUTER LOGIC, DATA PROCESSING SYSTEMS, DESIGN, FERROMAGNETIC MATERIALS, FILMS (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

CONTENTS: LIGHTNING TEST MACHINE LOGIC LOGIC
DESIGN OF THE LIGHTNING TEST MACHINE LOGIC
PROGRESS CLOCK FOR JUNE DEMONSTRATION UNIT
LOGIC CIRCUITS LOGIC TEST DEVICE
SATURATING OR-INVERTER LOGIC DRIVER CIRCUIT
CURRENT-STEERING INVESTIGATIONS SINGLE-INVERTER
COUNTER MEMORY CIRCUITS SENSE AMPLIFIERS
LMT SENSE DIGIT LOOP CIRCUIT JUNE DEMONSTRATION
UNIT WORD DRIVER HIGH-SPEED MEMORY SINGLE-BIT
SYSTEM MEMORY STACK DESIGN THEORETICAL
MAGNETIC FILM CORE INVESTIGATIONS OVERLAY
DESIGN PACKAGING INTERCONNECTIONS MODULES
JUNE DEMONSTRATION UNIT (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800294

AD-264 007
INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N Y
PROJECT LIGHTNING (U)
TGA 61 IV
CONTRACT: NGBSR77208

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *COMPUTERS, *CRYOGENICS, *DATA STORAGE SYSTEMS, *SUPERCONDUCTORS, CIRCUITS, COMPUTER LOGIC, ELECTRICAL PROPERTIES, MOLECULAR BEAMS, NUCLEATION, PHYSICAL CHEMISTRY, SUPERCONDUCTIVITY, SWITCHING CIRCUITS, THERMAL CONDUCTIVITY, THIN FILMS (STORAGE DEVICES), TRIGGER CIRCUITS (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-264 227
PHILCO NEWPORT BEACH CA IF AERONUTRONIC DIV
A MAGNETIC INTEGRATOR FOR THE PERCEPTRON PROGRAM (U)
SEP 61 1V HAWKINS,J.K.;MUNSEY,C.J.;
STAFFORD,R.A.;
REPT. NO. U 1405
CONTRACT: NONR291200

UNCLASSIFIED REPORT

DESCRIPTORS: *ANALOG COMPUTERS, *COMPUTER LOGIC, *DIGITAL COMPUTERS, COMPUTER STORAGE DEVICES, DATA STORAGE SYSTEMS, INSTRUCTON MANUALS, INTEGRATORS, LEARNING (U)

RESEARCH CONCERNS A SPECIAL-PURPOSE ELECTRONIC COMPUTER WHICH CAN BE DESCRIBED AS A HYBRID ANALOG-DIGITAL MACHINE WHOSE ELEMENTS POSSESS CERTAIN LOGIC AND MEMORY PROPERTIES. THE DIGITAL ELEMENTS OF THE COMPUTER ARE UNIT-DELAY MEMORY ELEMENTS WHOSE BINARY OUTPUTS ARE LINEAR-LOGIC THRESHOLD FUNCTIONS OF ITS INPUTS AND OF ITS ANALOG STORAGE ELEMENTS. THE ANALOG ELEMENTS ARE STORAGE DEVICES WHOSE VALUES CAN BE CHANGED BY INCREMENTAL AMOUNTS AS A SPECIAL FUNCTION OF THE STATES OF THE DIGITAL ELEMENTS AND (BINARY) INPUTS TO THE COMPUTER. THE MACHINE WAS CONCEIVED AS A GENERAL-PURPOSE EXTENSION OF THE PERCEPTRON MODEL. A BASIC FORM OF THE PERCEPTRON IS A NETWORK CONSISTING OF A FIRST LAYER OF FIXED LINEARLOGIC ELEMENTS, FOLLOWED BY ONE OR MORE LAYERS OF ADAPTIVE (VARIABLE COEFFICIENT) LINEAR-LOGIC ELEMENTS. LOGICAL FEEDBACK (CROSS-COUPLING) IS ACHIEVED BY PERMITTING CONNECTIONS FROM SUBSEQUENT TO PRIOR LAYERS IN THE NET. THE COMPUTER DESCRIBED CONSISTS OF 32 BASIC PERCEPTRON ELEMENTS, TOGETHER WITH APPROPRIATE INPUT AND CONTROL CIRCUITRY. BY EXTERNAL CONTROL, ANY ONE OR MORE OF THE ELEMENTS MAY BE MADE EITHER A FIXED LINEAR-LOGIC ELEMENT OR AN ADAPTIVE ONE. BY MEANS OF PROGRAM BOARD WIRING, ANY DESIRED NETWORK STRUCTURE CAN BE ARRANGED BY INTERCONNECTING SUITABLE ELEMENTS. (AUTHOR) (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800996

AD-264 355
CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB
A DISCRETE COMPENSATOR FOR SAMPLED-DATA SYSTEMS USING MAGNETIC CORES AS STORAGE ELEMENTS (U)
MAY 61 1V LENDARIS,G.G.;
REPT. NO. S60 1956
CONTRACT: AF18 600 1921
MONITOR: AFOSR 1141

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *DELAY LINES, AMPLIFIERS, COMPUTER STORAGE DEVICES, COMPUTERS, CONTROL SYSTEMS, DATA STORAGE SYSTEMS, DESIGN, FUNCTIONS, MAGNETIC CORES, SAMPLING (U)

THE CONSTRUCTION OF A DISCRETE COMPENSATOR TO BE USED IN A SAMPLED-DATA CONTROL SYSTEM IS DESCRIBED. THE COMPENSATOR EMPLOYS A DISCRETE DELAY LINE UTILIZING MAGNETIC CORES TO STORE, IN PULSE-WIDTH-MODULATED FORM, THE SAMPLED VALUES OF THE SIGNAL. THIS SYSTEM REQUIRES NO RELAYS OR STEPPING SWITCHES; EVERYTHING IS SOLID STATE EXCEPT FOR THE AMPLIFIERS USED IN THE SAMPLE AND HOLD CIRCUITS, DEMODULATION INTEGRATORS, AND COEFFICIENT MULTIPLICATION. THIS TAPPED DELAY LINE OPERATES LIKE A SHIFT REGISTER. A GROUP OF TOROIDAL CORES WITH COILS WOUND ON THEM ARE CONNECTED IN SERIES. EACH CORE IS SET TO NEGATIVE SATURATION; THEN A SIGNAL IS IMPRESSED ONTO THE FIRST CORE IN THE CHAIN FOR A CERTAIN PERI D OF TIME. NEXT, A RESET SIGNAL IS IMPRESSED ONTO THIS FIRST CORE, AND SIMULTANEOUSLY A SET SIGNAL OF THE SAME AMPLITUDE IS IMPRESSED ONTO THE SECOND CORE. THUS THE FIRST STEP OF THE SHIFTING I ACCOMPLISHED. THIS CAN BE REPEATED AS OFTEN AS DESIRED, DEPENDING ONLY ON HOW MANY CORES ARE IN THE CHAIN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-264 436
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC PRODUCTS
PROJECT LIGHTNING (U)
IV WARBURTON,PETER;

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING SYSTEMS, *DIODES, CIRCUITS, CODING, COMPUTER LOGIC, COMPUTER STORAGE DEVICES, COMPUTERS, COSTS, DATA STORAGE SYSTEMS, DESIGN, MATHEMATICAL LOGIC, PROGRAMMING (COMPUTERS), SWITCHING CIRCUITS (U)

TWO QUESTIONS ARE RAISED ABOUT THE SCOPE OF PROJECT LIGHTNING STUDIES. ONE QUESTION ASKS WHY A KILOMEGACYCLE COMPUTER MORE SUITED TO SCIENTIFIC WORK HAS NOT COME OUT OF THE STUDIES. THE SECOND QUESTION POSES THE PROBLEM OF TYPING SEVERAL MACHINES TOGETHER. A SHORT DISCUSSION OF THESE TWO QUESTIONS IS INCLUDED. ANOTHER PROBLEM IS DISCUSSED AS TO HOW BEST TO PREPARE FOR COST ESTIMATING A TUNNEL DIODE COMPUTER. THE INSTRUCTION REPERTOIRE FOR THE LARGE MACHINE DESIGN WAS REVISED. ALSO, A FIRST DRAFT OF AN INSTRUCTION REPERTOIRE FOR A SMALLER, THREEADDRESS MACHINE IS PRESENTED. WORK WAS BEGUN IN FLOW CHARTING THE INSTRUCTIONS AND TRIAL PROGRAMMING INPUT-OUTPUT ROUTINES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-264 497
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC PRODUCTS
PROJECT LIGHTNING (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING SYSTEMS, CIRCUITS, COMPUTER STORAGE DEVICES, COMPUTERS, DATA STORAGE SYSTEMS, DESIGN, DIGITAL COMPUTERS, DIODES, INSTRUMENTATION, RECTIFIERS, SEMICONDUCTORS, SWITCHING CIRCUITS (U)

INVESTIGATIONS OF SURFACE SENSING OF MAGNETIC FLUX SWITCHING HAVE CONTINUED BUT THE RESULTS ARE STILL INCONCLUSIVE. A MAJOR PROBLEM IS EXCESSIVE COUPLING OF THE SENSE LOOP TO THE DRIVE LINE. METHODS FOR CANCELLING THIS COUPLING ARE BEING INVESTIGATED. THE APPLICATION OF A TRANSVERSE FIELD TO A FERRITE ELEMENT HAS BEEN FOUND TO REDUCE THE SWITCHING TIME SIGNIFICANTLY WHILE LOWERING THE OUTPUT VOLTAGE ONLY SLIGHTLY. THE USE OF A PRECISION MASKING JIG HAS CONTRIBUTED TO CONSIDERABLE PROGRESS IN THE FABRICATION OF THE CLOSE-SPACED STRUCTURES REQUIRED FOR HIGH-SPEED OPERATION. A STUDY OF THE ALLOYING TEMPERATURE EFFECT ON THE ELECTRICAL CHARACTERISTICS OF 50-MA GE TUNNEL DIODES SHOWED A SHARP INCREASE OF SPEED RATIO WITH LOWER ALLOYING TEMPERATURES. THIS APPEARS TO BE CONSISTENT WITH PREDICTIONS. ELECTROMAGNETIC DELAYLINE STORAGE TECHNIQUES EMPLOYING BALANCED-PAIR TUNNEL DIODE LOGIC CIRCUITRY HAVE BEEN INVESTIGATED. ASSUMING 1-KMC OPERATION OF THE BALANCED-PAIR CIRCUITS, THE STUDY INDICATES THAT A 1024, 48-BIT DELAY-LINE MEMORY WITH 16 NS CYCLE TIME WILL REQUIRE LESS THAN ONE TUNNEL DIODE PER STORED BIT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-264 439
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC PRODUCTS
PROJECT LIGHTNING (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *DIGITAL COMPUTERS, CIRCUITS COMPUTERS, DESIGN, DIPOLE ANTENNAS, INSTRUMENTATION, RECTIFIERS, SEMICONDUCTORS, SWITCHING CIRCUITS (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

EFFORTS WERE DIRECTED TOWARD THE GOALS OF REDUCING TO PRACTICE SEVERAL CIRCUIT APPROACHES. THE CIRCUIT WORK IS NOW BEING DONE NOT ONLY AT FULL RISE TIME SPEED BUT AT REPETITION RATES IN THE HUNDREDS OF MEGACYCLES. AN ATTEMPT TO FIND THE LIMIT OF MEMORY REGENERATION SPEED FOR AN INDIVIDUAL CELL AND READ-WRITE AMPLIFIER RESULTED IN READ-WRITE TIMES OF 9 NANOSECONDS. THE LEADING CIRCUIT APPROACHES WERE SUBMITTED TO INTENSE SCRUTINY FROM THE LOGIC POINT OF VIEW. (AUTHOR) (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-264 787
RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC PRODUCTS
MICRO-MODULE PRODUCTION PROGRAM (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *MANUFACTURING METHODS, *SUBMINIATURE ELECTRONIC EQUIPMENT, CERAMIC CAPACITORS, COILS, COMMUNICATION EQUIPMENT, COMPUTERS, CONTAINERS, CRYSTAL HOLDERS, CRYSTALS, DESIGN, DIODES, ELECTROLYTIC CAPACITORS, ELECTRONIC EQUIPMENT, MATERIALS, PACKAGED CIRCUITS, PRODUCTION, QUARTZ, RESISTORS, SEMICONDUCTORS, TESTS, THIN FILMS (STORAGE DEVICES), TRANSISTORS (U)
IDENTIFIERS: AN/PRC-91, THIN FILMS (U)

THE REMAINDER OF THE 640 MICRO-MODULES REQUIRED FOR CONSTRUCTION OF SUBASSEMBLIES AND FOR EVALUATION TESTS WERE MADE AVAILABLE. P ROTOTYPE AND FINAL-GRADE TRIMMER CAPACITORS RATED AT 1.%-TO-% MICROMICROFARADS AND -TO-1) MICROMICROFARADS WERE CONSTRUCTED SUCCESSFULLY. THE FIRST 1000 HOURS OF A 2000-HOUR LIFE TEST AT 85 C WERE COMPLETED WITH NO REPORTED FAILURES. ASSEMBLY OF PROTOTYPE MODULES FOR THE AN/TYK-9 ( ) (MICROPAC) COMPUTER WAS INITIATED. NEWLY DEVELOPED CERAMIC TRIMMER CAPACITORS WERE INTRODUCED IN THE AN/PRC-91 RADIO SET. MICROELEMENT TRANSISTORS IN THE NEW MINIATURE PACKAGE ARE USED IN ALL MICRO-MODULES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-266 580
NATIONAL BIOMEDICAL RESEARCH FOUNDATION SILVER SPRING MD
COLLECTED PAPERS ON SWITCHING CIRCUIT THEORY AND LOGICAL AND SYSTEMS DESIGN (U)
OCT 61 1V LEDLEY,ROBERT S.;BOYLE,DON R.; WILSON,JAMES G.;
CONTRACT: NONR3265(00

UNCLASSIFIED REPORT

DESCRIPTORS: *DIGITAL SYSTEMS, *SWITCHING CIRCUITS, *SYNCHRONIZATION (ELECTRONICS), ALGEBRA, AUTOMATIC, CIRCUITS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES, COMPUTERS, CYBERNETICS, DATA STORAGE SYSTEMS, DESIGN, DIGITAL COMPUTERS, ELECTRICAL NETWORKS, MATHEMATICAL LOGIC, MATRIX ALGEBRA, MEMORY, PROGRAMMING (COMPUTERS), PULSE COMMUNICATION SYSTEMS, SEQUENCES, TABLES, THEORY, TIME, TRANSFORMATIONS (MATHEMATICS) (U)

CONTENTS: BOOLEAN MATRICES APPLIED TO SEQUENTIAL CIRCUIT THEORY AND THRESHOLD LOGICS MULTIVALUED LOGIC DEVICES FOR SIMULATING THRESH OLD NEURONS ORGANIZATION OF LARGE MEMORY SYSTEMS AN ALGORITHM FOR RAPID BINARY DIVISION (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-268 812
SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS DIV
PROJECT LIGHTNING. VOLUME I (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *DIGITAL COMPUTERS, *MAGNETIC TAPE, AMPLIFIERS, CIRCUITS, COMPUTER LOGIC, DESIGN, FERROMAGNETIC MATERIALS, FILMS, TRANSISTORS (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

CONTENTS: HIGH SPEED MEMORY HIGH SPEED MEMORY STACK DESIGN JUNE DEMONSTRATION UNIT (JDU) SENSE LINE ARRANGEMENTS SENSE AMPLIFIERS HIGH LEVEL WORD TRANSLATION SEARCH MEMORY READ CIRCUITS WRITE CIRCUITS LOGIC CIRCUITS JDU CLOCKING JDU POWER TRANSISTOR MEASUREMENTS RCTL CIRCUIT LOGIC CIRCUIT DESIGN (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-269 942
CATHOLIC UNIV OF AMERICA WASHINGTON D C
FERRIELECTRICS AS A POSSIBLE COMPUTER ELEMENT (U)
OCT 61 IV PULVARI,CHARLES F.
CONTRACT: AF33 616 7423
MONITOR: ASD (R&D)

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, *DIGITAL COMPUTERS, *FERROELECTRIC MATERIALS, COMPUTER LOGIC, ELECTRICAL PROPERTIES, HIGH-TEMPERATURE RESEARCH, NON-DESTRUCTIVE TESTING, POLARIZATION, SWITCHING CIRCUITS, TESTS (U)

RESEARCH ON HIGH TEMPERATURE FERROELECTRIC STORAGE MEDIA LED TO THE DISCOVERY OF A CLASS OF FERROELECTRIC MATERIALS WHICH REQUIRE A MINIMUM THRESHOLD FIELD FOR SWITCHING. THIS PROPERTY WAS HERETOFORE NOT OBSERVED IN ORDINARY FERROELECTRICS AND COMPARES WITH SIMILAR PROPERTIES FOUND IN FERRITE CORES. WORK WAS CONDUCTED ESSENTIALLY TO EXPLOIT THE PHENOMENON OF FERRIELECTRICITY FOR APPLICATION IN COMPUTER LOGICAL DEVICES. THE FEASIBILITY OF PREPARING CAPACITORS HAVING A FERRIELECTRIC AS A DIELECTRIC WAS INVESTIGATED. LIMITING ELECTRICAL PARAMETERS OF THE DEVICE WERE DETERMINED. FINALLY, A NOVEL NON-DESTRUCTIVE READOUT METHOD WAS INVESTIGATED USING ELECTROMAGNETIC INTERFEROMETER TECHNIQUES. WITH THE EXPERIMENTAL DEVICE CONSTRUCTED, THE BEST SIGNALTO-NOISE RATIO OBTAINED WAS 611. IT IS POSSIBLE TO OBTAIN MILLIONS OF READOUTS FROM A FERROELECTRIC CAPACITOR WITHOUT DESTROYING THE STATE OF POLARIZATION OF THE FERROELECTRIC CAPACITOR. (AUTHOR) (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-269 496
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC PRODUCTS
PROJECT LIGHTNING (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *COMPUTERS, *DATA PROCESSING SYSTEMS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES, DATA STORAGE SYSTEMS, DIODES, RESEARCH PROGRAM ADMINISTRATION (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

WORK WAS DIRECTED TOWARD SETTING THE STAGE FOR THE CONSTRUCTION OF A SUBSYSTEM WHICH WILL DEMONSTRATE THE FEASIBILITY OF THE TECHNIQUES DEVELOPED DURING THE PREVIOUS PERIODS. IT WAS DECIDED THAT THE BEST CHOICE FOR LOGIC CIRCUITRY LAY IN THE D-C DRIVEN CLASSIFICATION. THE BROAD GROUNDWORK FOR ALL CONSTRUCTION DECISIONS WAS MADE AND MANY DETAILED ONES HAVE BEEN FIRMED UP. INDIVIDUAL MONOSTABLE AMPLIFIERS OF THE TYPE CONSIDERED TO BE THE BACKBONE OF THE D-C APPROACH HAVE BEEN OPERATED AT REPETITION RATES AS HIGH AS 940 MC. ALL THE CIRCUIT TYPES TO BE USED IN THE MEMORY WORK HAVE BEEN OPERATED INDIVIDUALLY AND MANY HAVE BEEN PROVED BY USE IN THE NINE-WORD TEST MEMORY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-269 697
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC PRODUCTS
PROJECT LIGHTNING (U)
IV WARBURTON,PETER;

UNCLASSIFIED REPORT

DESCRIPTORS: CIRCUITS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES, COMPUTERS, DATA PROCESSING SYSTEMS, DATA STORAGE SYSTEMS, DIODES, RESEARCH PROGRAM ADMINISTRATION (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

APPLICATION OF THE PROCESSOR SYSTEM HAS BEEN MODIFIED SOMEWHAT IN THAT THE KILOMEGACYCLE COMPUTER IS TO BE CONSIDERED PART OF A LARGER DATAPROCESSING SYSTEM AND IS NOT INTENDED PRIMARILY FOR ARITHMETIC PROBLEMS. THE QUESTION OF CONVENTIONAL VERSUS UNCONVENTIONAL DESIGN IS DISCUSSED. ANOTHER BOUNDARY, THAT OF THE EFFECT OF TUNNEL-DIODE COMPONENTS, HAS BEEN MODIFIED IN THAT THE LOW FAN POWER OF TUNNEL DIODE CIRCUITS CONFLICTS WITH THE DESIRE FOR COMPLEX AND SOPHISTICATED LOGIC. VARIOUS ASPECTS OF INPUTOUTPUT ARE ALSO DISCUSSED, AND THE CONTROL SCHEME IS PRESENTED. FINALLY, THE CHARACTERISTICS OF THREE PROPOSED COMPUTERS (FROM LARGE TO SMALL) ARE SET FORTH AS A FAMILY OF DESIGNS. (AUTHOR) (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-271 084
RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC PRODUCTS
FLUX LOGIC PERMALLOY SHEET MEMORY (U)
IV BRIGGS,G.R.;TORREY,R.D.;

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, *DIGITAL COMPUTERS, COMPUTER LOGIC, FILMS, IRON ALLOYS, MAGNETIC CORES, MANUFACTURING METHODS, MINIATURE ELECTRONIC EQUIPMENT, NICKEL ALLOYS, SHEETS, SWITCHING CIRCUITS, TEST EQUIPMENT, TEST SETS (U)

EFFORTS ARE BEING MADE TO DEVELOP THIN PERMALLOYSHEET MEMORY ARRAYS UTILIZING MULTI-APERTURED ELEMENTS OPERATED IN THE INHIBITED-FLUX MODE, AND TO DEVELOP ASSOCIATED MEM RY CIR UITS. THE CIRCUITS WILL TAKE ADVANTAGE OF MICROMODULE AND OTHER MINIATURIZATION TECHNIQUES, AND A SMALL SYSTEM WILL BE CONSTRUCTED TO DEMONSTRATE THE FEASIBILITY OF THIS TYPE OF MEMORY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-273 795
INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N Y
PROJECT LIGHTNING (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *CRYOGENICS, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *SWITCHING CIRCUITS, CIRCUITS, COMPUTERS, DESIGN, MATERIALS, MATHEMATICAL LOGIC, MEASUREMENT, SUPERCONDUCTORS, THERMAL CONDUCTIVITY, THIN FILMS (STORAGE DEVICES), TRIGGER CIRCUITS (U)
IDENTIFIERS: THIN FILMS, THIN FILMS ELECTRONICS (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-273 736
INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N Y
*PROJECT LIGHTNING (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *CRYOGENICS, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *SWITCHING CIRCUITS, CIRCUITS, DESIGN, INDIUM, MATERIALS, MATHEMATICAL LOGIC, SUPERCONDUCTORS, THIN FILMS (STORAGE DEVICES), TIN (U)
IDENTIFIERS: LIGHTNING PROJECT, THIN FILMS (U)

GENERAL RESULTS ARE PRESENTED ON THE CHARACTERISTICS OF TIN AND INDIUM CRYOTRONS EVAPORATED IN CONVENTIONAL EVAPORATORS WITH NO SPECIAL TECHNIQUES SUCH AS SUBSTRATE HEATING OR PRENUCLEATION. INDIUM FROM THE CONVENTIONAL SYSTEM IS COMPARED WITH FILMS FROM MORE ELABORATE SYSTEMS. INDIUM FROM THE CONVENTIONAL SYSTEM COMPARED FAVORABLY WITH THAT PRODUCED IN AN ULTRA-HIGH VACUUM SYSTEM. REPRODUCIBILITY RESULTS FOR FOUR IN-LINE CRYOTRONS ON ONE SUBSTRATE INDICATE THAT THE CRYOTRONS CANNOT BE INTERCONNECTED WITH A SUFFICIENT MARGIN OF SAFETY ON THE BIAS OR OVERDRIVE ON THE CONTROL WHEN MAXIMUM OPERATING SPEED IS DESIRED. THE CRITICAL CURRENTS FOR A NUMBER OF TIN AND INDIUM FILMS ARE PLOTTED AS A FUNCTION OF THE RATIO OF FILM THICKNESS TO PENETRATION DEPTH. THE GAIN CHARACTERISTICS OF UNITY CROSSING CROSSED-FILM CRYOTRONS ARE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-272 748
SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS DIV
PROJECT LIGHTNING. VOLUME 1. (U)
DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. NO. 5, VOL. 1, 1 JUN-31 AUG 61 ON PHASE 3.
AUG 61 49P
REPT. NO. PX-1599-5-VOL-1
CONTRACT: NOBSR-77521

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *DIGITAL COMPUTERS, *MAGNETIC TAPE, AMPLIFIERS, CIRCUITS, COMPUTER LOGIC, DESIGN, FERROMAGNETIC MATERIALS, FILMS, THIN FILMS (STORAGE DEVICES), TRANSISTORS (U)
IDENTIFIERS: THIN FILMS, THIN FILMS ELECTRONICS (U)

CONTENTS: SEARCH MEMORY JDU CLOCKING POWER SUPPLY SYSTEM FOR THE JDU PACKAGING JDU LOGIC MODULE TEST FILM SPOT OUTPUT SIGNAL INPUT-OUTPUT EQUIPMENT FOR THE LTM PHILADELPHIA PROGRESS REPORT (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-273 749
SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS DIV
PROJECT LIGHTNING. VOLUME II. (U)
DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. NO. 9, VOL. 2, 1 JUN-31 AUG 61 ON PHASE 3.
AUG 61 97P
REPT. NO. PX-1599-5-VOL-2
CONTRACT: NOBSR-77921

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, *DIGITAL COMPUTERS, *MAGNETIC CORES, *MAGNETIC TAPE, *THIN FILMS (STORAGE DEVICES), COMPUTER LOGIC, DATA PROCESSING SYSTEMS, ELECTRODEPOSITION, FERROMAGNETIC MATERIALS, GLASS, MANUFACTURING METHODS, METALLIC SMOKE DEPOSITS, METALS, PROCESSING (U)
IDENTIFIERS: LIGHTNING PROJECT, THIN FILMS (U)

CONTENTS: FILM CORE PROGRAM FILM DEPOSITION TECHNIQUES APPARATUS AND INSTRUMENTATION FILM PROPERTY MEASUREMENTS SWITCHING AND RESONANCE STUDIES APPLICATIONS MATHEMATICS AND LOGIC RESEARCH IMPROVED GENERAL-PURPOSE LOGIC ARRAY MAJORITY-LOGIC COMPARATOR MAJORITY-MINORITY CONVERSION THEOREM LIGHTNING TEST MACHINE HIGH-SPEED MEMORY STACK DESIGN SENSE AMPLIFIER HIGH-LEVEL WORD TRANSLATION FILM STRIPS REPRODUCIBILITY OF ELECTROPLATED THIN FILMS (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-273 784
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
A SOLID STATE BUFFER-MEMORY SYSTEM TO HANDLE RANDOMLY TRANSMITTED INFORMATION (U)
IV HOROWITZ,RICHARD M.

UNCLASSIFIED REPORT

DESCRIPTORS: *COMMUNICATION THEORY, *COMPUTER LOGIC, *COMPUTER STORAGE DEVICES, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, ANALYSIS, CODING, COMPUTERS, DATA TRANSMISSION SYSTEMS, ERRORS, MAGNETIC TAPE, PROBABILITY, SEQUENCES, SWITCHING CIRCUITS, TIME INTERVAL COUNTERS (U)

THE DIGITAL DATA HANDLING SECTION IN A WEST FORD RECEIVER SYSTEM PERFORMS THE SPECIFIC FUNCTIONS OF TEMPORARILY STORING AND THEN TRANSFERRING ERROR AND CERTAIN SPECIAL DATA TO A HIGH SPEED MAGNETIC TAPE UNIT FOR ULTIMATE COMPUTER DATA PROCESSING. A FIXED 16-BIT BINARY WORD IS REPEATEDLY TRANSMITTED OVER THE DIPOLE CHANNEL. THE RETURNING BITS OF INFORMATION ARE SEQUENTIALLY COMPARED FOR ERRORS WITH REPRODUCTIONS OF THE TRANSMITTED WORD. DISCREPANCIES BETWEEN THE TRANSMITTED AND RECEIVED BITS THUS DERIVED BY COMPARISON ARE ASSEMBLED FOR SUBSEQUENT STORAGE AND RECORDING. IN ADDITION TO THE ERROR WORD JUST MENTIONED, THREE OTHER WORD TYPES --PARAMETER, MEASUREMENT AND RADAR, EACH CONTAINING 96 BITS OF INFORMATION PERTINENT TO OTHER ASPECTS OF THE COMMUNICATION EXPERIMENT, ARE ALSO ASSEMBLED FOR PROCESSING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-274 177
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC PRODUCTS
PROJECT LIGHTNING (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER LOGIC, *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, *DIODES, *GATES (CIRCUITS), DELAY CIRCUITS, DIGITAL COMPUTERS, PROGRAMMING (COMPUTERS), TRANSISTORS (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

THE QUARTER'S WORK CONCENTRATED UPON COMPLETING THE FROZEN DESIGNS, BOTH ELECTRICAL AND MECHANICAL, AND BEGINNING CONSTRUCTION OF THE SUBSYSTEM, TO BE COMPLETED DURING PHASE III B. THIS SUBSYSTEM WILL DEMONSTRATE FEASIBILITY OF THE TECHNIQUES DEVELOPED DURING THE COURSE OF PROJECT LIGHTNING. THE WORST-CASE DESIGNS OF THE LOGIC SUBSYSTEM WERE FINALIZED, AND ALL TYPES OF WAFERS WERE CONSTRUCTED AND TESTED. PERFORMANCE OF THESE WAFERS WAS ESSENTIALLY IN AGREEMENT WITH ANALYTIC CALCULATIONS. IT IS BELIEVED THAT THE SUBSYSTEM CAN BE BUILT WITH NO FURTHER KEY INVENTION REQUIRED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-275 169
RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC PRODUCTS
MICRO-MODULE PRODUCTION PROGRAM (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *MANUFACTURING METHODS, *MICROMINIATURIZATION (ELECTRONICS), CAPACITORS, CIRCUITS, COILS, COMPUTER STORAGE DEVICES, CRYSTALS, DATA STORAGE SYSTEMS, DIGITAL COMPUTERS, DIODES, ELECTRONIC EQUIPMENT, ENCAPSULATION, LIFE EXPECTANCY, PRODUCTION, RELIABILITY, RESEARCH PROGRAM ADMINISTRATION, RESISTORS, SEMICONDUCTORS, SWITCHING CIRCUITS, TRANSFORMERS, TRANSISTORS (U)
IDENTIFIERS: AN/PRC-91 (U)

THE INITIAL PROGRAM TO ESTABLISH FEASIBILITY AND RELIABILITY OF MICRO-MODULES OF A LIMITED RANGE AND SELECTION OF MICROELEMENTS WAS COMPLETED. EFFORT WAS CONTINUED TO IMPROVE AND EXTEND INDUCTOR PARAMETERS, TO DEVELOP CERAMIC TRIMMER CAPACITORS WHICH ME T THE REQUIREMENTS OF COMMUNICATION MICRO-MODULES, AND TO IMPROVE PROCESSES FOR MAKING MICRO-MODULES. ALL WORK ON MICRO-MODULE ASSEMBLY WAS COMPLETED. PROTO YPE PULSE TRANSFORMERS WERE PLACED ON LIFE TEST. A 455 KC INDUCTOR WAS DESIGNED ON A POWDERED IRON CORE AND TESTING OF THE UNIT WAS INITIATED. IN THE OBJECTIVE TO DESIGN AND BUILD TRANSMITTER AND RECEIVER MICRO-MODULES FOR RADIO SET AN/PRC-91 AND MICRO-MODULES FOR THE MICROPAC COMPUTER, 93 OF THE REQUIRED 96 MICRO-MODULES WERE DELIVERED. THREE ENGINEERING MODELS OF THE TRANSMITTER, AND ONE MODEL OF THE RECEIVER, OF THE AN/PRC-91 RADIO SET WERE TESTED. A BREADBOARD MODEL OF A MICROPAC COMPUTER WITH A TEMPERATURE CONTROL SYSTEM INCLUDING A THERMOELECTRIC COOLING SYSTEM WAS FABRICATED AND TESTED.
(AUTHOR) (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-279 910
REMINGTON RAND UNIVAC DIV SPERRY RAND CORP PHILADELPHIA PA
THE PREPARATION AND CHARACTERISTICS OF TI N FERROMAGNETIC FILMS (U)
IV MATHIAS,JOSEPH S.;FREITAG,WALTER; KRIESSMAN,CHARLES J.;
REPT. NO. 970
CONTRACT: AF19 604 4970
MONITOR: AFCRL 970

UNCLASSIFIED REPORT

DESCRIPTORS: *FERROMAGNETIC MATERIALS, *THIN FILMS (STORAGE DEVICES), ACETYL RADICALS, COMPUTER STORAGE DEVICES, COMPUTERS, DATA STORAGE SYSTEMS, DECOMPOSITION, ELECTRODEPOSITION, ELECTROPLATING, FILMS, IRON, IRON COMPOUNDS, MAGNETIC PROPERTIES, MANUFACTURING METHODS, METALLIC SMOKE DEPOSITS, METALORGANIC COMPOUNDS, NICKEL, NICKEL COMPOUNDS, SOLUTIONS, SULFATES, VAPOR PLATING (U)

INVESIGATIONS INDICATE THAT THE THERMAL DECOMPOSITION OF ACETYLACETONATES IS NOT A FEASIBLE METHOD FOR PRODUCING FE-NI THIN FILMS BECAUSE THE NI ACETYLACETONATE DECOMPOSES AND POLYMERIZES, GREATLY REDUCING VAPOR PRESSURE. THIN FE FILMS CAN BE EASILY FORMED BY THIS PROCESS. THERMAL DECOMPOSITION OF CARBONYL VAPORS OF NI AND FE PRODUCE MAGNETIC FE-NI FILMS WHICH USUALLY HAVE HIGH COERCIVITY. HOWEVER, ANNEALING THESE FILMS IN WET H LOWERS THE COERCIVITY AND PRODUCES FILMS THAT CAN BE USED FOR COMPUTER ELEMENTS. SOME UNUSUAL EFFECTS, TERMED VARIABLE-THRESHOLD PROPERTIES, WERE NOTED IN FILMS PREPARED BY THIS METHOD. THE REPRODUCIBILITY OF FILMS HAVING THESE PROPERTIES IS POOR. ELECTRODEPOSITION OF THIN MAGNETIC FILMS FROM AQUEOUS SOLUTION OF NI AND FE SULFATES PROVED TO BE THE MOST USEFUL AND REPRODUCILE TECHNIQUE. FILMS HAVING A THICKNESS OF 1000 ANGSTROMS CAN BE PRODUCED WITH A COERCIVE FORCE OF 2.2 OERSTEDS, AND AN ANISOTROPY FIELD OF 4 OERSTEDS. THESE FILMS, WHICH SWITCH IN A ROTATABLE MODE UNDER THE INFLUENCE OF A DRIVE FIELD AND CROSS FIELD, WERE USED SUCCESSFULLY AS COMPUTER MEMORY ELEMENTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-276 299
ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N Y
THEORY OF A MULTIPLE TAPE QUEUING SYSTEM AND ITS
APPLICATION TO ELECTRONIC SYSTEMS (U)
IV MORENOFF,EDWARD;MCLEAN,JOHN B.;

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA STORAGE SYSTEMS, *MAGNETIC TAPE,
DATA PROCESSING SYSTEMS, PROBABILITY (U)

A STORAGE TECHNIQUE KNOWN AS RAPTAP (RAPID ACCESS PARALLEL TAPE) WAS CONCEIVED AT RADC IN AN EFFORT TO PROVIDE A STORAGE MEDIUM WHICH HAS BOTH A GREATLY REDUCED ACCESS TIME TO DESIRED DATA AND ECONOMY OF OPERATION. THESE OBJECTIVES ARE SATISFIED BY A RAPTAP INNOVATION WHICH RESULTS IN THE ABILITY TO SIMULTANEOUSLY MOVE ALL TAPE UNITS UNDER THE CONTROL OF A SINGLE TAPE CONTROL UNIT, AND IN THE ABILITY TO MOVE MAGNETIC TAPE AT RAPID REWIND TAPE SPEEDS OVER SECTIONS OF TAPE KNOWN NOT TO CONTAIN DESIRED DATA, RATHER THAN AT THE NORMAL SLOWER SEARCH SPEEDS. THE SELECTION AND RETRIEVAL OF DATA FROM THE RAPTAP STORAGE SYSTEM IS DIRECTLY ANALOGOUS TO THE SELECTION OF DATA FROM DISC FILE SYSTEMS. THE RAPTAP TECHNIQUE IS DESCRIBED IN THIS REPORT, AND THE ECONOMY OF OPERATION AND THE REDUCTION OF ACCESS TIME TO DESIRED DATA ARE CONSIDERED IN TERMS OF THE FOLLOWING MODES OF QUERYING AN ORDERED ARRAY OF DATA: (1) RANDOM QUERIES; (2) BATCHED QUERIES; AND (3) INDEPENDENT GROUPS OF RANDOM QUERIES, EACH GROUP CONTAINING RELATED SUBQUERIES. A NEW MEANS OF ORGANIZING THE ORDERED ARRAYS OF DATA IS DESCRIBED WHICH PROVIDES FOR IMPROVED SEARCHES OF THE QUERIES, DESCRIBED IN (3) ABOVE, BY CAPITALIZING ON A UNIQUE CHARACTERISTIC OF THE RAPTAP SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-282 816
BURROUGHS CORP PHILADELPHIA PA
MAGNETIC PARAMETRON LOGIC ELEMENTS (U)
DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. NO. 1, 1 APR-30 JUN 62.
JUN 62 1V EINHORN,S.N.;POWELL,W.S.;
CONTRACT: DA36 039SC89204
PROJ: 3A99-15-001-03

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER LOGIC, *DIGITAL COMPUTERS, *MICROMETERS, MAGNETIC TAPE, PRINTED CIRCUITS, THIN FILMS (STORAGE DEVICES) (U)
IDENTIFIERS: THIN FILMS, THIN FILMS ELECTRONICS, PARAMETRONS (U)

RESEARCH IS BEING DIRECTED TOWARD THE DEVELOPMENT OF ADVANCED PARAMETRON ELEMENTS, CONFIGURATIONS, CIRCUIT ARRANGEMENTS, AND MODES OF OPERATION SUITED TO PERFORM LOGIC FUNCTIONS IN DATA PROCESSING SUB-SYSTEMS. EMPHASIS IS PLACED ON THE REALIZATION OF RELIABLE MAGNETIC-FILM PARAMETRONS WHICH LEND THEMSELVES TO LARGE SCALE PRODUCTIONAT LOW COST. A PART OF THE PARAMETRON DESIGN EFFORT WAS A STUDY OF DEMAGNETIZING FIELDS, WHICH POINTS TO THE FEASIBILITY OF SMALL COILS WITH 2 BY 2 MM FILM ELEMENTS. INDUCTANCE MEASUREMENTS AND OPERATIONAL TESTS OF PARAMETRON COILS HAVE, SO FAR, LED TO AN OPTIMUM DESIGN HAVING 34 TURNS OF NO. 44 WIRE. HOWEVER, AN EFFORT IS UNDERWAY TO REDUCE THE NUMBER OF TURNS, SINCE THE CAPACITANCE REQUIRED FOR RESONANCE AT THE 25-MC SIGNAL FREQUENCY IS SMALL COMPARED TO THE ESTIMATED WIRING CAPACITANCE. A MODEL INCORPORATING PROPOSED PACKAGING TECHNIQUES WAS CONSTRUCTED. THE TECHNIQUES INCLUDE A PRINTEDCIRCUIT BOARD FOR LOGIC INTERCONNECTIONS, A GROUND PLANE WHICH BOTH COMPLETES THE LOGIC SIGNAL PATHS AND SHIELDS THE SIGNAL CIRCUITS FROM THE PUMP FIELDS, AND A MINIATURE PRINTEDCIRCUIT PARAMETRON COMPONENT BOARD. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-284 290
CALIFORNIA UNIV BERKELEY INST OF ENGINEERING RESEARCH
A SPIN-ECHO MEMORY FOR A CARRIER TYPE DIGITAL COMPUTER (U)
IV WANLASS,L.K.I

REPT. NO. S60 17992767
CONTRACT: AF49 638 102
MONITOR: AFOSR 2767

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, BARIUM COMPOUNDS, CALCITE, CRYOGENICS, DIGITAL COMPUTERS, NUCLEAR SPINS, OSCILLATORS, RUBY, SILICON, SULFATES (U)

ELECTRON SPIN-ECHO WAS STUDIED AS A POSSIBLE CARRIER DIGITAL COMPUTER MEMORY ELEMENT AT MICROWAVE FREQUENCIES. A GENERAL STUDY IS MADE OF SOLID STATE PARAMAGNETIC CRYSTALS AS POSSIBLE STORAGE MATERIALS. SPIN-SPIN AND SPIN-LATTICE RELAXATION TIMES ARE CONSIDERED IN GENERAL, AND WERE MEASURED FOR CALCITE, SILICON, AND OTHER CRYSTALS. A STUDY WAS MADE OF CROSS-RELAXATION IN CALCITE USING A STIMULATED SPIN-ECHO TECHNIQUE. A DECREASE IN THE POTENTIAL STORAGE TIME OF THIS CRYSTAL BY A FACTOR OF 8000 IS REPORTED DUE TO THIS RELAXATION MECHANISM. DETAILED MEASUREMENTS WERE MADE ON THE SPINECHO SIGNALS OBTAINABLE AT MICROWAVE FREQUENCIES, AND USABLE AMPLITUDE ECHOES ARE REPORTED FOR MANY CRYSTALS AND IMPURITY CONCENTRATIONS. A STUDY OF NOISE SOURCES AND SIGNAL TO NOISE RATIOS WAS MADE. AN ORIGINAL SYSTEM FOR STORING THE PHASE OF PHASE SCRIPT INFORMATION PULSES WAS INVESTIGATED. A COMPLETE CARRIER COMPUTER REGENERATIVE MEMORY SYSTEM USING TWO SPIN-ECHO DEVICES AND A SINGLE CONNECTING CHANNEL WAS CONSIDERED. THE STORAGE CAPACITY OF THE MEMORY DEVICE WAS THEORETICALLY DETERMINED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800994

AD-284 973
MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS LAB
SOME ASPECTS OF THE STATE ASSIGNMENT PROBLEM FOR SEQUENTIAL CIRCUITS (U)
SEP 62 IV HARING,DONALD RUSSELL
REPT. NO. R 147
CONTRACT: AF33 616 7700

UNCLASSIFIED REPORT

DESCRIPTORS: *SWITCHING CIRCUITS, CODING, COMPUTER LOGIC, COMPUTER STORAGE DEVICES, COMPUTERS, DATA STORAGE SYSTEMS, DIGITAL SYSTEMS, SYNTHESIS (U)

ONE OF THE MAJOR STEPS IN THE SYNTHESIS OF SWITCHING CIRCUITS CONTAINING MEMORY IS THE BINARY CODING OF THE INTERNAL STATES. THE CHOICE OF CODE, CALLED THE STATE ASSIGNMENT, STRONGLY AFFECTS THE COMPLEXITY OF THE CIRCUIT REALIZATION. HENCE, THE OBJECTIVE IS TO FIND, FOR A GIVEN SEQUENTIAL MACHINE (SM) AS TYPICALLY SPECIFIED BY A FLOW TABLE AND AN OUTPUT TABLE, THAT STATE ASSIGNMENT (SA) WHICH MINIMIZES THE SEQUENTIAL CIRCUIT (SC) COMPLEXITY. THE POINT OF VIEW IS TAKEN THAT THE GREATEST LACK IN PROMOTING AN UNDERSTANDING OF THE SA PROBLEM IS A KNOWLEDGE OF THE STRUCTURE OF THE RELATIONSHIP BETWEEN THE PROPERTIES OF THE SM AND THE PROPERTIES OF THE LOGIC REQUIRED BY ITS SC REALIZATION. CONSEQUENTLY, A LARGE PART OF THIS REPORT IS DEVOTED TO DEVELOPING AND USING SOME NEW TECHNIQUES FOR STUDYING THE STRUCTURE OF THIS SM-SC RELATIONSHIP. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-289 686
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AERONAUTICAL ELECTRONIC AND ELECTRICAL LAB
APPLICATION OF THIN MAGNETIC FILMS TO COMPUTER TECHNOLOGY (U)
AUG 62 1V HORN,ROBERT W.I
REPT. NO. 6222

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTERS, *MAGNETIC TAPE, *METAL FILMS, *THIN FILMS (STORAGE DEVICES), COMPUTER STORAGE DEVICES, DATA PROCESSING SYSTEMS, DATA STORAGE SYSTEMS, IRON ALLOYS, MAGNETIC MATERIALS, NAVAL AIRCRAFT, NICKEL ALLOYS (U)
IDENTIFIERS: THIN FILMS (M)

THE APPLICATION OF THIN MAGNETIC FILMS TO COMPUTER TECHNOLOGY IS DISCUSSED. PERMALLOY FILMS, THIN FILMS, AND MEMORY SYSTEMS. TECHNICAL INFORMATION FOR NAVAL AIRBORNE DATA PROCESSING SYSTEMS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-292 172
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
THE FX-1 MAGNETIC FILM MEMORY (U)
IV RAFFEL,J.I.;ANDERSON,A.H.;

REPT. NO. TR278TDR62 250
CONTRACT: AF19 628 500
MONITOR: ESD TDR62 250

UNCLASSIFIED REPORT

DESCRIPTORS: *MAGNETIC RECORDING SYSTEMS, COMPUTERS, DIGITAL SYSTEMS, MAINTENANCE, RELIABILITY, THIN FILMS (STORAGE DEVICES) (U)
IDENTIFIERS: THIN FILMS, THIN FILMS ELECTRONICS (M)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00296

AD-292 241
ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N Y
TAPE ADAPTATION AND CONTROL UNIT (U)
IV MUOIO,A.W.;

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *DIGITAL RECORDING SYSTEMS, *MAGNETIC RECORDING SYSTEMS, DIGITAL COMPUTERS, MAGNETIC TAPE, PROGRAMMING (COMPUTERS), RESEARCH PROGRAM ADMINISTRATION (U)
IDENTIFIERS: PERT (U)

THE TAPE ADAPTATION AND CONTROL UNIT PROVIDES THE NECESSARY LOGIC AND CONTROL CIRCUITRY TO PERMIT A COMPUTER TO CONTROL AND TRANSFER DATA TO ANY ONE OF EIGHT MAGNETIC TAPE STATIONS. THREE TYPES OF MAGNETIC TAPE STATIONS MAY BE USED. COMPUTER INPUT-OUTPUT TRANSFER TIME MAY BE MINIMIZED BY THE FUTURE MODULAR ADDITION OF A MAGNETIC CORE BUFFER. THIS REPORT PRESENTS A DETAILED NARRATIVE OF THE ANALYSIS AND DESIGN WORK PERFORMED ON THE FIRST PHASE OF THE TACU PROGRAM; NAMELY, THE DESIGN PHASE. THE INTRODUCTION CONTAINS A DESCRIPTION OF THE TACU PROGRAM, A GENERAL BACKGROUND OF THE PROBLEM, AND A BREAKDOWN OF THE DESIGN PHASE INTO THE VARIOUS SUB-TASKS. THE DISCUSSION CONTAINS THE SY TEM ANALYSIS, SYSTEM AND LOGICAL DESIGN, CIRCUIT DESIGN, MECHANICAL DESIGN, POWER SUPPLY DESIGN, RELIABILITY, MAINTAINABILITY, AND ERROR DETECTION AND CORRECTION OF TACU. A PERT CHART ILLUSTRATES THE MAJOR SUB-TASKS AND THEIR INTERRELATIONSHIPS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-295 405
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC PRODUCTS
PROJECT LIGHTNING (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *DATA TRANSMISSION SYSTEMS, CONFIGURATION, CONTROL SYSTEMS, COOLING, DESIGN, PERSONNEL, POWER SUPPLIES, RELIABILITY, SWITCHING CIRCUITS, TIME DELAY RELAYS, TIMING CIRCUITS (U)
IDENTIFIERS: LIGHTNING PROJECT (U)

THE FABRICATION, DESIGN, AND DEVELOPMENT OF LOGIC AND MEMORY SUBSYSTEMS FOR USE IN HIGH SPEED DATA PROCESSING SYSTEMS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-298 822
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
A SHIFT REGISTER-DECODER (U)
JAN 63 IV MARTYNOV,YE.M.;
REPT. NO. TT 62 1436

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, *FREQUENCY SHIFT CONVERTERS, CIRCUITS, COMPUTERS, MAGNETIC CORES, TRANSISTORS (U)
IDENTIFIERS: USSR (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-298 199
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
UTILITY SYSTEM PROGRAMMING PROPOSALS. A TWO TAPE
SYSTEM FOR COPII (U)
FEB 3 1V PRUETT,BILLIE R.;
REPT. NO. TM 890 006 00
CONTRACT: AF19 628 1648

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING SYSTEMS, COMPUTERS,
INPUT-OUTPUT DEVICES, PROGRAMMING (COMPUTERS) (U)

PROPOSAL FOR A TWO TAPE SYSTEM FOR COPII COMPUTER.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-299 007
AMERICAN OPTICAL CO SOUTHBRIDGE MASS
STUDY OF OPTICAL FIBER TECHNIQUES FOR DATA PROCESSING (U)
AUG 62 1V KOESTER,CHARLES J.;
CONTRACT: AF30 602 2440

UNCLASSIFIED REPORT

DESCRIPTORS: *FIBER OPTICS, *LASERS, *PHOSPHORESCENT MATERIALS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES, COMPUTERS, DATA PROCESSING SYSTEMS, DATA STORAGE SYSTEMS, DIODES, ELECTRONIC SWITCHES, FLUORESCENCE, INFRARED OPTICAL MATERIALS, MAGNETO-OPTIC EFFECT, NEODYMIUM, REFRACTIVE INDEX, RUBY, SILICON (U)
IDENTIFIERS: NEURISTORS (U)

STUDY OF OPTICAL FIBER TECHNIQUES FOR DATA PROCESSING. LASER SWITCHING EXPERIMENTS. FARADAY AND KEN EFFECT EXPERIMENTS. PHOSPHOR AND DETECTOR STUDIES. NEURISTOR LASER ANALYSIS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-401 450
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
INFORMATION FOR COP USERS 088 CARD READ AND 929 CARD
PUNCH CAPABILITY (U)
MAR 63 1V TABER,W.E.;
REPT. NO. TM892 004 00
CONTRACT: AF19 628 1648

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING SYSTEMS, COMPATIBILITY, INPUT-OUTPUT DEVICES, PROGRAMMING (COMPUTERS), PUNCHED CARDS (U)

CARD READ AND CARD PUNCH CAPABILITY AND COMPATIBILITY.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-401 644
BENDIX CORP TETERBORO N J ECLIPSE-PIONEER DIV
HIGH DENSITY OPTICAL MEMORY DRUM (U)
FEB 63 1V LEE,W.W.I
CONTRACT: AF33 616 7999
MONITOR: ASD TDR62 791

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE SYSTEMS, DENSITY, DESIGN, DIGITAL COMPUTERS, FIBER OPTICS, MANUFACTURING METHODS, MICROMINIATURIZATION (ELECTRONICS), OPTICAL COATINGS, OPTICAL EQUIPMENT COMPONENTS, PHOTOGRAPHIC IMAGES (U)

HIGH-DENSITY OPTICAL MEMORY DRUM.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-402 125
RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC PRODUCTS
A TELETYPEWRITER ADAPTER UNIT FOR THE DRISROTE APERTURED PLATE MEMORY (U)
1V
CONTRACT: AF33 657 7905
MONITOR: ASD TDR63 1098

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *TELETYPE SYSTEMS, COMPUTER LOGIC, DATA PROCESSING SYSTEMS, INPUT-OUTPUT DEVICES, SWITCHING CIRCUITS, TIMING CIRCUITS (U)

A TELETYPEWRITER ADAPTER UNIT FOR THE DRISROTE APERTURED PLATE MEMORY.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-407 906
JOINT PUBLICATIONS RESEARCH SERVICE WASHINGTON D C
SEMICONDUCTOR DEVICES IN COMPUTER ENGINEERING, (U)
FEB 62 36P LUBENNIKAVA,I. L. I
KARACHANTSAVA,N. YA. I

UNCLASSIFIED REPORT
NOTICE: ALSO FROM OTS FOR $1.00 AS REPT.62-
11124.
SUPPLEMENTARY NOTE: TRANS. OF AKADEMIYA NAVUK BSSR,
MINSK, VESTSI, SERIYA FIZIKA-TEKHNICHNYKH NAVUK,
1961, NO. 1, P. 59-74.

DESCRIPTORS: *DIGITAL COMPUTERS, COMPUTERS,
*SEMICONDUCTOR DEVICES, COMPUTER STORAGE DEVICES,
SWITCHING CIRCUITS, TRIGGER CIRCUITS, PUNCHED TAPE,
TRIODES, DESIGN, INPUT-OUTPUT DEVICES (U)

SEMICONDUCTOR DEVICES IN COMPUTER ENGINEERING.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-406 060
CBS LABS STAMFORD CONN
FEASIBILITY STUDY FOR A THIN FILM MEMORY SYSTEM. (U)
DESCRIPTIVE NOTE: FINAL
MAY 63 20P
CONTRACT: NOBSR87314
PROJ: SF007 01 01
TASK: 7191

UNCLASSIFIED REPORT

DESCRIPTORS: *THIN FILMS (STORAGE DEVICES), *COMPUTER LOGIC, NICKEL ALLOYS, IRON ALLOYS, COBALT ALLOYS, SWITCHING CIRCUITS, FEASIBILITY STUDIES, TIMING CIRCUITS, DIGITAL COMPUTERS, CIRCUITS. (U)
IDENTIFIERS: TORISTOR, THIN FILMS, THIN FILMS ELECTRONICS (U)

THE OBJECT OF THIS PROJECT IS TO DESIGN AND DEVELOP A FEASIBILITY TEST MODEL OF A SMALL, THIN FILM DIGITAL MEMORY. THE MODEL IS TO BE A 4 WORD, 2 BITS/WORD, NONDESTRUCTIVE, LINEAR SELECT MEMORY. READOUT AND WRITE-IN IS TO BE IN PARALLEL AT A CLOCK FREQUENCY OF 5 MC, AND ADDRESSING WAS TO BE SEQUENTIAL. THE MEMORY ELEMENT TO BE USED IS THE TOROIDAL THIN FILM NI-FE-CO ''TORISTOR''. THE TORISTOR IS A THIN FILM NI-FE-CO CYLINDER WHICH HAS BEEN PLATED ON EITHER A GLASS CAPILLARY TUBE OR A STAINLESS STEEL HYPODERMIC TUBE. THOUGH ITS SWITCHING CHARACTERISTICS ARE SIMILAR TO THE PLANAR DOT MEMORY ELEMENT, IT OFFERS THE FOLLOWING ADVANTAGES: (1) A MUCH LARGER OUTPUT SIGNAL; (2) NONDESTRUCTIVE READ CHARACTERISTIC; (3) RELATIVE FREEDOM FROM THE DESTRUCTIVE EFFECT OF STRONG MAGNETIC FIELDS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-418 715
SERVO CORP OF AMERICA LINDENHURST N Y
MICROELECTRONIC CIRCUITRY IN MICRO-MODULES. (U)
DESCRIPTIVE NOTE: FINAL RPT., 1 JUNE 61-8 OCT 62,
OCT 62 1V WEBER,H.;WELD,S.;
PETERTYL,S.;PUTZ,AND R.;
CONTRACT: DA36 039SC87316
TASK: 2A99 15 002 03

UNCLASSIFIED REPORT

DESCRIPTORS: (*MOLECULAR ELECTRONICS, MANUFACTURING METHODS), MODULES (ELECTRONIC), RELAXATION OSCILLATORS, GATES (CIRCUITS), SWITCHING CIRCUITS, SEMICONDUCTOR DEVICES, VAPOR PLATING, RESISTORS, CAPACITORS, BONDING. (U)
IDENTIFIERS: GLASS SUBSTRATES, SHIFT REGISTERS, 1962. (U)

THIS REPORT DESCRIBES THE STEPS UNDERTAKEN IN THE MICROMINIATURIZATION OF SIGNAL CORPS MODULES USED IN A SUBASSEMBLY PREVIOUSLY MANUFACTURED FROM STANDARD COMPONENTS. THIS SUBASSEMBLY IS A SHIFT REGISTER CONSISTING OF 28 FLIP-FLOPS, ONE 4-GATE NETWORKS, AND THREE DRIVER CIRCUITS. FOR EACH TYPE OF CIRCUIT, A TYPICAL LAYOUT EVERY FILM IS SHOWN AT 10X SCALE. FOR THE FIRST CON DUCTOR FILM ON THE FLIP-FLOP CIRCUITS, THE COM PLETE 16 POSITION MASK IS SHOWN IN FULL SCALE. A DESCRIPTION OF THE MATERIAL USED, THE THICK NESS, AND THE FUNCTIONS OF EACH FILM IS GIVEN, TOGETHER WITH THE METHOD OF MONITORING DURING DEPOSITION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-419 553
IBM WATSON RESEARCH CENTER YORKTOWN HEIGHTS N Y
APPLIED RESEARCH PROGRAM AEROSPACE INTELLIGENCE
DATA SYSTEM (AIDS). VOLUME II - CONSOLES. (U)
DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 4.
SEP 62 28P
CONTRACT: AF19 626 10

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, COMPUTERS), TRANSDUCERS, DISPLAY SYSTEMS, PROGRAMMING:COMPUTERS), COMPUTER LOGIC, INPUT-OUTPUT DEVICES, HUMAN ENGINEERING, DESIGN (U)
IDENTIFIERS: 1962. (U)

SOME GENERAL CHARACTERISTICS OF CONSOLES WHEN USED AS TRANSDUCERS BETWEEN HUMAN BEINGS AND INFORMATION PROCESSING DEVICES ARE REVIEWED. TEST OF A SPECIFIC CONSOLE DESIGNED FOR INDEPENDENT ''OFF LINE'' USE, THE DATACOM MODEL 408-2 IS DESCRIBED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-420 261
RAND CORP SANTA MONICA CALIF
A GENERAL VIEWPOINT ON SHIFT-REGISTER SEQUENCES, (U)
OCT 63 19P REED,I. S. I
REPT. NO. RM3874PR
CONTRACT: AF49 638 700

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTER LOGIC, CIRCUITS) (*RELAXATION OSCILLATORS, COMPUTER LOGIC), DESIGN, DIGITAL COMPUTERS, COMMUNICATION SYSTEMS, DIGITAL SYSTEMS, SYNTHESIS, SEQUENCES, COMPUTER STORAGE DEVICES, DELAY LINES, DIFFERENCE EQUATIONS (U)
IDENTIFIERS: 1963, SHIFT REGISTERS, SEQUENCE GENERATORS (U)

THE SHIFT-REGISTER COUNTER IS A DEVICE COMPRISED OF A SMALL NUMBER OF DIGITAL FLIP-FLOPS INTERCONNECTED TO EMIT A LONG, PREDETERMINED, NONREPEATING SERIES OF BINARY BITS. THE THEORY OF THEIR DESIGN IS EXAMINED, CONCENTRATING ON THE SYNTHESIS OF COUNTERS ABLE TO CREATE EXTREMELY LONG SEQUENCES BY SEQUENTIALLY MODIFYING THE EFFECTIVE CONNECTIONS OR OPERATORS IN THE FEEDBACK LOOPS. NON-LINEAR SHIFT-REGISTERS ARE EXAMINED FROM SEVERAL DIFFERENT POINTS OF VIEW, AND THEN THE INSIGHT SO AFFORDED IS APPLIED TO GENERALIZE UPON THE POSSIBLE DIRECTIONS WHICH MIGHT YIELD MAXIMAL LENGTH SEQUENCES WITH A MINIMUM OF EQUIPMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-423 822
ILLINOIS UNIV URBANA ENGINEERING EXPERIMENT STATION
MULTIPLEXING SPECIAL PURPOSE ACCESSORIES TO A DIGITAL
COMPUTER, (U)
SEP 63 21P PURI,Y. K. I
REPT. NO. RRL218 ,TR21
CONTRACT: NONR1834 02 ,NOBSR89229
PROJ: NR371 161

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DIGITAL COMPUTERS, MULTIPLEX),
(*MULTIPLEX, INPUT-OUTPUT DEVICES), (*INPUTOUTPUT
DEVICES, ELECTRICAL NETWORKS), DATA PROCESSING
SYSTEMS, DATA TRANSMISSION SYSTEMS, COMPUTER LOGIC,
CIRCUITS, SWITCHING CIRCUITS, GATES (CIRCUITS),
RELAXATION OSCILLATORS, TRIGGER CIRCUITS, PROGRAMMING
(COMPUTERS) (U)
IDENTIFIERS: 1963, G-20 COMPUTER (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-421 559
DAVID TAYLOR MODEL BASIN WASHINGTON D C
A TRANSISTORIZED EXPANDED TRANSLATOR FOR THE UNIVAC
MOD 407 CARD-TO-TAPE CONVERTER, (U)
DEC 63 52P HANCOCK,H. LEE ,JR.;
MONITOR: DTMB 1760

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INPUT-OUTPUT DEVICES, CIRCUITS), COMPUTER LOGIC, NETWORKS, DESIGN, PROGRAMMING (COMPUTERS), DATA PROCESSING SYSTEMS, PUNCHED CARDS, MAGNETIC TAPE (U)
IDENTIFIERS: 1963, CARD-TO-TAPE CONVERTERS, UNIVAC MOD 407 TRANSLATOR (U)

THIS REPORT SUMMARIZES THE DESIGN, DEVELOPMENT, AND CONSTRUCTION OF A TRANSISTORIZED TRANSLATOR TO EXPAND THE MOD 407 REMINGTON RAND CARD-TO-TAPE CONVERTER (48-CHARACTER FORMAT) TO A FULL 63CHARACTER FORMAT CONVERTER. THE LOGICAL DESIGN, CIRCUIT DESIGN, AND CONSTRUCTION AS WELL AS THE ADDITIONAL CIRCUITRY REQUIRED FOR THE COMPARISON MODULE AREDESCRIBED AND DISCUSSED. NOW IN FULL OPERATION, THIS EXPANDED TRANSLATOR IS GIVING RELIABLE, MAINTENANCE-FREE SERVICE IN THE APPLIED MATHEMATICS LABORATORY OF THE DAVID TAYLOR MODEL BASIN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-435 108
MITRE CORP BEDFORD MASS
AN INPUT/OUTPUT TYPEWRITER FOR COMMUNICATING WITH A DIGITAL COMPUTER, (U)
MAR 64 44P MITCHELL,J. I
REPT. NO. TM3838
CONTRACT: AF19 628 2390
PROJ: 508
MONITOR: ESD TDR64 81

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DIGITAL COMPUTERS, TYPEWRITERS), (*TYPEWRITERS, DIGITAL COMPUTERS), INPUT-OUTPUT DEVICES, DESIGN, DATA STORAGE SYSTEMS, INSTRUCTION MANUEL, CIRCUITS (U)
IDENTIFIERS: 1964, CODES, SYMBOLS (U)

AN INPUT/OUTPUT TYPEWRITER PROVIDES THE TYPIST WITH MEANS OF ENTERING DATA INTO A COMPUTER PROGRAM THROUGH THE KEYBOARD AND A MEANS OF OBTAINING DATA FROM THE COMPUTER THROUGH THE PRINTER. AN INPUT/OUTPUT TYPEWRITER, WHICH IS A MODIFICATION OF A STANDARD SELECTRIC TYPEWRITER, HAS BEEN DESIGNED FOR USE WITH THE PHOENIX COMPUTER THROUGH THE LOW-SPEED BUFFER OR WITH THE MITRE 7030 COMPUTER THROUGH THE SYSTEM DESIGN LABORATORY (SDL) DISPLAY CONSOLES. THE OPERATION OF THIS TYPEWRITER IS DESCRIBED, AND THE FUNCTIONS OF THE MAJOR COMPONENTS EXPLAINED. THE APPENDICES GIVE DETAILS OF THE CODING AND OF THE SYSTEM DESIGN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-435 463
HOUSTON FEARLESS CORP LOS ANGELES CALIF
AUTOMATIC UNIT-RECORD STORAGE AND RETRIEVAL DEVICE
BS-6A.
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. (U)
APR 64 49P SPENGLER,S. (MAISNER,L.)
REPT. NO. R113 64
CONTRACT: AF30 602 2993
PROJ: 4594
TASK: 459402
MONITOR: RADC TDR63 903

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INFORMATION RETRIEVAL, COMPUTERS), DATA PROCESSING SYSTEMS, DATA STORAGE SYSTEMS, COMPUTER LOGIC, DESIGN, TEST SETS (U)
IDENTIFIERS: 1964, SCRM PROJECT, BS-6A (U)

PROJECT SCRAM'S PRIME PROGRAM OBJECTIVE IS TO ESTABLISH ECONOMICAL METHODS OF STORING 10,000 UNIT RECORDS AND RETRIEVING THEM AT A MINIMUM RATE OF 190 PER SECOND PER MODULE. HYDRAULIC AND PNEUMATIC METHODS OF UNIT-RECORD TRANSPORT PROVED OPERATIONALLY UNRELIABLE AND DIFFICULT TO IMPLEMENT DURING SUBSEQUENT BREADBOARDING, SO THEY WERE ABANDONED. MORE RELIABLE AND ECONOMICAL ELECTROMECHANICAL HARDWARE WAS DEVELOPED. LOGIC SUBSYSTEM DESIGN, SPECIAL MEMORY-CONTROL CIRCUIT DESIGN, DESIGN OF COMMERCIAL LOGIC CARDS, AND THE DRUM MEMORY DESIGN ARE DISCUSSED IN THIS REPORT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800796

AD-464 766
ROYAL AIRCRAFT ESTABLISHMENT FARNBOROUGH (ENGLAND)
DIGITAL MAGNETIC TAPE UNITS FOR THE MERCURY AND DEUCE
COMPUTERS. PART 2. CONTROL CIRCUITS. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT..
NOV 64 IV SANDERSON,K. ITHANE,P. D. M.
;
REPT. NO. TR-64094

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*MAGNETIC TAPE, DIGITAL
COMPUTERS), (*DIGITAL COMPUTERS, MAGNETIC
TAPE), INPUT-OUTPUT DEVICES, GREAT BRITAIN,
POWER SUPPLIES, COMPUTER LOGIC, CIRCUITS (U)

THIS REPORT DESCRIBES THE FUNCTION AND FORMAT
SELECTION CIRCUITS, THE CIRCUITS CONTROLLING TAPE
DRIVE AND TAPE SPOOLING, AND THE POWER SUPPLIES FOR
THE MERCURY AND DEUCE COMPUTERS. (AUTHOR)
(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-600 271
TEXAS INSTRUMENTS INC DALLAS
DEVELOPMENT OF AN INTERMEDIATE CAPACITY, HIGHSPEED MAGNETIC FILM MEMORY SYSTEM. (U)
DESCRIPTIVE NOTE: TECHNICAL DOCUMENTARY REPT., 19 JULY 62-15 MAY 63,
AUG 63 56P TOOMBS,H. D. IDELHOM,L. A. I
CONTRACT: AF33 657 9228
PROJ: 4339
TASK: 433917
MONITOR: RTD TDR63 4216

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DATA STORAGE SYSTEMS, MAGNETIC RECORDING SYSTEMS), (*MAGNETIC RECORDING SYSTEMS, DATA STORAGE SYSTEMS), (*DATA STORAGE SYSTEMS, CIRCUITS), MAGNETIC FIELDS, COMPUTERS, ALUMINUM, TRANSFORMERS, TRANSISTORS (U)
IDENTIFIERS: MAGNETIC FILMS (U)

THE REPORT DESCRIBES THE DESIGN AND DEVELOPMENT OF A MAGNETIC FILM MEMORY SYSTEM WITH A STORAGE CAPACITY OF 4096 BITS ARRANGED AS 512 WORDS OF 8 BITS EACH. THE WORD-ORGANIZED SYSTEM HAS A READ-WRITE CYCLE TIME OF 142 NANOSECONDS. THE STORAGE MEDIUM CONSISTS OF CONTINUOUS SHEETS OF MAGNETIC FILM DEPOSITED ON POLISHED ALUMINUM SUBSTRATES. THE LOCATION AND SIZE OF THE STORAGE BITS ARE DEFINED BY THE INTERSECTION OF THE WORD AND DIGIT-SENSE CONDUCTORS. A TRANSISTOR-CURRENT TRANSFORMER MATRIX IS USED TO PERFORM WORD SELECTION AND TO PROVIDE AN 800-MILLIAMPERE, 89-NANOSECOND BASE WIDTH WORD DRIVE PULSE. A BIPOLAR DIGIT PULSE OF ±200-MILLIAMPERE, 40-NANOSECOND BASE WIDTH IS USED. CURRENT SWITCHING IS USED IN THE LOW-LEVEL LOGIC CIRCUITS. PERTINENT MEMORY WAVEFORMS ALONG WITH OPERATING RESULTS ARE GIVEN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-600 938
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
DATA SYSTEMS. (U)
DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT., DIVISION 2.
1 FEB30 APR 64.
MAY 64 21P FRICK,F. C. ;DODD,S. H. ;
CONTRACT: AF19 628 500
MONITOR: ESD TDR64 97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, DIGITAL COMPUTERS), (*DIGITAL COMPUTERS, DESIGN), (*SYSTEMS ENGINEERING, DATA PROCESSING SYSTEMS), COMPUTER LOGIC, COMPUTER STORAGE DEVICES, ELECTRONIC EQUIPMENT, COMPILERS, PROGRAMMING (COMPUTERS), BIONICS, INFORMATION RETRIEVAL, BALLISTICS (U)

CONTENTS: DIGITAL COMPUTERS--COMPUTER SYSTEMS; CIRCUIT DEVELOPMENT; MAGNETIC FILM ENGINEERING; ELECTRON TRANSPORT; MAGNETIC FILMS; ADVANCED CIRCUITS; AUTOMATIC PROCEDURE EXECUTOR; CONTROL RESEARCH--DATA FILE, STORAGE, RETRIEVAL AND EDITING. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-601 498
NATIONAL SCIENTIFIC LABS INC MCLEAN VA
ALL-ELECTRONIC DATA INPUT-OUTPUT STUDY, (U)
DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT., NO. 2, 1 JAN-31 MAR 64,
MAR 64 49P LEPPER,WENDELL E. ;
CONTRACT: DA36 039AMC03246E
PROJ: 9828 04 001
TASK: 1G6 40603D494 03

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, INPUT-OUTPUT DEVICES), (*INPUT-OUTPUT DEVICES, DATA PROCESSING SYSTEMS), (*PRINTING, REVIEWS), PIEZOELECTRIC TRANSDUCERS, PUNCHED CARDS, MAGNETOSTRICTIVE ELEMENTS, PHOTOGRAPHIC PRINTERS, LASERS, FEASIBILITY STUDIES (U)
IDENTIFIERS: JET PRINTING, CARD READER (U)

JET PRINTING STUDIES DURING THIS QUARTER INDICATED THAT, ALTHOUGH THE TRANSDUCERS STUDIED MAY NOT BE FEASIBLE FOR PIERCING MULTIPLE SHEETS OF PAPER, THEY MAY BE USEFUL FOR PRINTING ONE OR MORE COPIES BY IMPACT OF THE JET ON CARBON PAPER. THE SPARK DISCHARGE METHOD OF JET ENERGIZING IS CONSIDERED IMPRACTICAL BECAUSE OF THE HIGH VOLTAGE LEVELS REQUIRED AND BECAUSE OF PROBLEMS ARISING FROM HIGH OPERATING TEMPERATURES. BARIUM TITANATE WAS ADJUDGED THE BEST PRACTICAL PIEZOELECTRIC MATERIAL; SIMILARLY, PURE NICKEL IS THE BEST READILY AVAILABLE MAGNETOSTRICTIVE MATERIAL. POSSIBLE JET PRODUCTION VIA A PRESSURIZED VESSEL WITH ELECTROMECHANICAL VALVES WAS CONSIDERED IMPRACTICAL AND WAS NOT PURSUED. GAS TUBES AND NEON LAMPS ARE POTENTIALLY USEFUL AS ELECTRONIC DISPLAY SOURCES FOR PHOTOGRAPHIC OR ELECTROSTATIC PRINTING. THEY CAN OPERATE AT HIGH SPEEDS AND THEY ARE RELATIVELY INEXPENSIVE. USE WITH FIBER OPTICS WOULD OFFER FLEXIBILITY OF CONSTRUCTION METHODS. OTHER LIGHT SOURCES, E.G., LASERS, ELECTROLUMINESCENCE, AND CATHODE-RAY TUBES, MAY BE USED IN ELECTROSTATIC PRINTING. METHODS OF MODULATING THE DIRECTION OF A LASER BEAM ELECTRICALLY MAY BE USEFUL FOR FUTURE PRINTING DEVICES, IF COST BECOMES REASONABLE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-601 618
NAVAL ORDNANCE LAB WHITE OAK MD
DELAY LINE TIME COMPRESSOR WOX-3A. (U)
APR 64 53P MUNSON,JOHN C. I
BARTON,LESTER E. I
TASK: RUDC3B000 902
MONITOR: NOL TR61 47

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DELAY LINES, DATA PROCESSING SYSTEMS), (*DATA PROCESSING SYSTEMS, DIGITAL SYSTEMS), HIGH FREQUENCY, DATA STORAGE SYSTEMS, TRANSISTORS, SONAR EQUIPMENT, ACOUSTICS, CIRCUITS, DESIGN, GRAPHICS, SIGNALS, PROCESSING, OPERATION, CORRELATORS, CLIPPER CIRCUITS, ELECTRONICS (U)
IDENTIFIERS: DELTIC WOX-3A, WOX-3A COMPRESSOR (U)

THIS REPORT DESCRIBES IN SOME DETAIL THE FULLY TRANSISTORIZED WOX-3A DELAY LINE TIME COMPRESSOR (DELTIC). THE BIT RATE IS 10 MEGACYCLES. THIS EQUIPMENT HAS PROVEN TO BE VERY RELIABLE IN DAILY OPERATION. THE TRANSISTORIZATION HAS GREATLY REDUCED THE POWER REQUIRED RELATIVE TO / COMPARABLE VACUUM TUBE MODEL. SINCE THE PRINCIPLES OF DELTIC OPERATION HAVE BEEN PRESENTED FULLY IN EARLIER REPORTS (PB-165 034) ONLY A SHORT DESCRIPTION OF BASIC PRINCIPLES IS GIVEN. INSTEAD, THE DETAILS OF CIRCUIT OPERATION ARE BRIEFLY TREATED. BLOCK DIAGRAMS, SCHEMATICS, AND PHOTOGRAPHS SHOWING COMPONENT LAYOUTS ARE INCLUDED. PHOTOGRAPHS ARE SHOWN OF TYPICAL WAVEFORMS AT VARIOUS POINTS WITHIN THE SYSTEM, AND THESE ARE KEYED TO THE BLOCK DIAGRAMS AND SCHEMATICS. ALL DIAGRAMS ARE GROUPED AT THE END OF THE REPORT TO FACILITATE USE IN TROUBLESHOOTING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-602 067
IBM DATA SYSTEMS DIV KINGSTON N Y
CRYOGENIC ASSOCIATIVE PROCESSOR PLANE TEST AND EVALUATION. (U)
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR 19 AUG-19 DEC 63.
JUN 64 30P ROSENBERGER,G. B. ;
CONTRACT: AF30 602 3179
PROJ: 8581
TASK: 558108
MONITOR: RADC TD 64 26

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CRYOGENIC STORAGE DEVICES, RESEARCH PROGRAM ADMINISTRATION), MANUFACTURING METHODS, PERFORMANCE (ENGINEERING), DATA PROCESSING SYSTEMS, SUPERCONDUCTIVITY, CIRCUITS, FILMS, POLYMERS, VAPOR PLATING, VACUUM APPARATUS, CAPACITORS, LEAD, TIN, METAL FILMS, SILICON COMPOUNDS, MONOXIDES, ELECTRIC INSULATION, ELECTRON BOMBARDMENT (U)
IDENTIFIERS: CRYOTRONS (U)

THE FABRICATION AND TESTING OF A CRYOGENIC ASSOCIATIVE PROCESSOR ARE DESCRIBED IN THIS REPORT. THE PROCESSOR CONSISTED OF 2350 CRYOTRONS INTERCONNECTED TO FORM TEN 12-BIT WORDS OF ASSOCIATED STORAGE. THE CRYOTRONS AND THE NECESSARY CONTROL CIRCUITRY WERE VACUUM-DEPOSITED ON A FOUR AND A HALF BY FOUR AND A HALF INCH SUBSTRATE. POLYMER TYPE INSULATION WAS USED. THE FABRICATION PROCESS AND THE REASONS FOR LIMITED SUCCESS OF THE PROGRAM ARE DISCUSSED IN DETAIL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800996

AD-605 263
BAY STATE ELECTRONICS CORP WALTHAM MASS
BS-501 HIGH-SPEED CORRELATOR. (U)
DESCRIPTIVE NOTE: FINAL REPT.
AUG 64 86P
CONTRACT: TO 602 2915
PROJ: 552
TASK: 552401
MONITOR: RADC , TDR64 198

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CORRELATORS, DESIGN), (*SPECIAL PURPOSE COMPUTERS, CORRELATORS), OPERATION, REAL TIME, CORRELATION TECHNIQUES, CIRCUITS, DIGITAL COMPUTERS, ACOUSTICS (U)
IDENTIFIERS: BS-501 CORRELATOR (U)

THIS REPORT DESCRIBES THE DESIGN AND DEVELOPMENT OF AN EXPERIMENTAL REAL TIME AUDIO BANDWIDTH (80 TO 5000 CPS) CORRELATOR THAT WILL DISPLAY A CORRELOGRAM WHILE OPERATING 'ON LINE.' THE CORRELATION INDEX IS DISPLAYED AS A FUNCTION OF RELATIVE DELAY AND TIME FOR EITHER AUTO OR CROSS CORRELATION. THE CORRELOGRAM IS PRESENTED AS A THREE-DIMENSIONAL DISPLAY ON THE CRT OF A SELF-CONTAINED OSCILLOSCOPE WITH THE X AXIS PRESENTING TIME, Y AXIS RELATIVE DELAY AND Z (INTENSITY) REPRESENTING THE CORRELATION INDEX. SIGNAL INPUT CIRCUITRY INCLUDES A NORMALIZ (AGC) FUNCTION WITH 40 DB DYNAMIC RANGE ALONG THE NECESSARY GROSS INPUT LEVEL CONTROLS AND METERING. A FIVE-BIT A TO D CONVERTER DRIVES A RECIRCULATING MEMORY SPEED UP SYSTEM. APPROPRIATE CLOCK, ACCUMULATOR, AND COMPUTE CIRCUITS ARE USED TO APPROXIMATE CORRELATION COEFFICIENT AT A REAL TIME RATE. THE OUTPUT D TO A CONVERTER DRIVES THE Z AXIS OF THE OSCILLOSCOPE TO INDICATE THE CORRELATION COEFFICIENT. THE OPERATING FEATURES OF THIS DEVICE ARE GIVEN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-606 290
MASSACHUSETTS INST OF TECH CAMBRIDGE INSTRUMENTATION LAB
TRANSISTORIZED SHIFT REGISTER. (U)
DESCRIPTIVE NOTE: BACHELOR OF SCIENCE THESIS,
JUN 57 74P SCHOENDORF,WILLIAM H. ;
REPT. NO. T-126
CONTRACT: AF04 645 9
PROJ: 52 126

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART UNSATISFACTORY. REPRODUCTION HAS BEEN MADE FROM BEST AVAILABLE COPY.

DESCRIPTORS: (*TRANSISTORS, MAGNETIC CORES), (*MAGNETIC CORE STORAGE, TRANSISTORS), DELAY CIRCUITS, DIODES, PENTODES, RADIOFREQUENCY PULSES, SWITCHING CIRCUITS, VOLTAGE, ELECTRIC CURRENTS, WIRING DIAGRAMS, EXPERIMENTAL DATA (U)
IDENTIFIERS: SHIFT REGISTERS (U)

THE OBJECTIVE WAS TO STUDY A TRANSISTORIZED MAGNETIC CORE SHIFT REGISTER AND TO EVALUATE A SUITABLE POWER TRANSISTOR AS A POSSIBLE DRIVING SOURCE FOR THE REGISTER. INVESTIGATION OF THE REGISTER WAS ORIGINALLY CARRIED OUT USING A PENTODE DRIVER IN ORDER TO OFFER A MEANS FOR COMPARISON WITH THE TRANSISTOR SHIFTING SOURCE. THE WESTERN ELECTRIC GA-52630 PNP JUNCTION TRANSISTOR WAS FOUND TO MEET THE REGISTER REQUIREMENTS QUITE SATISFACTORILY. OPERATING REGIONS OF THE SHIFT REGISTER WERE OBTAINED USING THIS TRANSISTOR IN THE GROUNDED EMITTER AND GROUNDED BASE CONFIGURATIONS, AND THE LATTER WAS FOUND TO BE MORE SUCCESSFUL. IT WAS POSSIBLE TO DRIVE THIRTY CORES QUITE RELIABLY USING THE GROUNDED BASE CONFIGURATION, AND THE OPERATING REGIONS OBTAINED COMPARED FAVORABLY WITH THOSE OF THE VACUUM TUBE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-606 604
RAND CORP SANTA MONICA CALIF
CONTRASTS IN LARGE FILE MEMORIES FOR LARGE SCALE COMPUTERS, (U)
MAR 58 8P POSTLEY,JOHN A. I
REPT. NO. P-1230

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART UNSATISFACTORY. REPRODUCTION HAS BEEN MADE FROM BEST AVAILABLE COPY.

DESCRIPTORS: (*COMPUTER STORAGE DEVICES, DIGITAL COMPUTERS), PERFORMANCE (ENGINEERING), CONTROL SYSTEMS, ANALYSIS, MAGNETIC TAPES (U)

THE INCREASING REQUIREMENT FOR VERY LARGE FILES IN DIGITAL COMPUTER SYSTEMS HAS LEAD TO THE IDENTIFICATION OF SEVERAL IMPORTANT CHARACTERISTICS OF THESE FILES, AND TO THE DEVELOPMENT OF FILES WHICH EXHIBIT THESE CHARACTERISTICS IN VARYING DEGREES. AS A RESULT, A NEW SITUATION HAS BEEN CREATED WHEREIN A DETAILED STUDY OF THESE CHARACTERISTICS WILL NOW BE NECESSARY IN SOME APPLICATIONS TO DETERMINE THE PARTICULAR FILE MOST SUITABLE FOR THE PROBLEM OR PROBLEMS TO BE DEALT WITH. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-607 230
MIDWEST RESEARCH INST KANSAS CITY MO
INVESTIGATION OF ELECTRO- AND MAGNETOOPTIC TECHNIQUES FOR INFORMATION STORAGE AND RETRIEVAL. (U)
DESCRIPTIVE NOTE: TECHNICAL DOCUMENTARY REPT. FOR 1 MAY 64-31 JUL 64.
SEP 64 72P CONNELL,R. A. I
CONTRACT: AF33 657 11560
PROJ: 7062 ,2699P
TASK: 706201
MONITOR: AL , TDR64 228

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, MATERIALS), (*THIN FILMS (STORAGE DEVICES), PRODUCTION), (*MANGANESE COMPOUNDS, BISMUTH COMPOUNDS), DATA STORAGE SYSTEMS, INFORMATION RETRIEVAL, INTERMETALLIC COMPOUNDS, FERROMAGNETIC MATERIALS, MAGNETO-OPTIC EFFECT, OPTICAL PROPERTIES, CRYSTALS, EVAPORATION, POWDERS, CRYSTAL STRUCTURE (U)

A PROGRAM OF RESEARCH ON MATERIALS FOR HIGH DENSITY INFORMATION STORAGE AND RETRIEVAL WAS CONDUCTED, WITH EMPHASIS ON THE FABRICATION OF THIN FILMS OF MNBI. THIS INTERMETALLIC COMPOUND IS FERROMAGNETIC, WITH ITS AXIS OF EASY MAGNETIZATION ALONG ITS HEXAGONAL C-AXIS. POLYCRYSTALLINE FILMS OF THIS MATERIAL GENERALLY SHOW A STRONGLY PREFERRED ORIENTATION, WITH THE C-AXIS NORMAL TO THE PLANE OF THE FILM. SUCH A CONFIGURATION IS IDEAL FOR THE EMPLOYMENT OF MAGNETO-OPTICAL READ-OUT SYSTEMS. MAJOR PROBLEMS EXIST IN THE CONTROL OF NUCLEATION AND GROWTH OF SUITABLY ORIENTED MNBI, AND IT WAS HERE THAT MAXIMUM EFFORT WAS MADE. SEVERAL FABRICATION TECHNIQUES WERE TRIED, INCLUDING PHYSICAL SPUTTERING, GRAIN-BY-GRAIN FLASH EVAPORATION OF BOTH MIXED POWDERS AND PREFORMED ALLOY POWDER, AND SEQUENTIAL EVAPORATION SCHEMES. THE LATTER METHOD GAVE THE BEST RESULTS IN SPITE OF PROBLEMS IN INTERLAYER DIFFUSION AND COMPOUND FORMATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-607 906
THOMPSON RAMO WOOLDRIDGE INC LOS ANGELES CALIF
THE RAMO-WOOLDRIDGE CORPORATION GENERAL RESEARCH PROGRAM, 1957. SECTION E. MAGNETIC DIGITAL TECHNIQUES. (U)
DESCRIPTIVE NOTE: PROGRESS REPT.,
JAN 58 7P SCARBROUG',A. D. INYBERG,J. J. I

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*MAGNETIC CORES, DIGITAL SYSTEMS), (*THIN FILMS (STORAGE DEVICES), MAGNETIC CORE STORAGE), CIRCUITS, ELECTROMAGNETIC PROPERTIES, PLATING, DIGITAL COMPUTERS (U)
IDENTIFIERS: THIN FILMS, THIN FILMS ELECTRONICS (M)

A PROGRESS REPORT IS PRESENTED ON THE INVESTIGATIONS OF DIGITAL CIRCUITS USING FERRITE MEMORY CORES AND THIN FILMS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-608 077
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
TAPE-DRIVE ASSEMBLY FOR MAGNETIC TAPES IN THE M-2
COMPUTER, (U)
OCT 64 20P KNYAZEV,V. D. ;SAKHAROV,V. N. ;
MONITOR: FTD ,TT MT64 231; ,64 71686

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF TSIFROVAYA TEKHNIKA I VYCHISLITEL'NYE USTROISTVA (USSR) 1962, NO. 2, P.88-97.

DESCRIPTORS: (*MAGNETIC TAPE, ELECTROMAGNETIC DRIVES), (*DRIVES, MAGNETIC TAPE), COMPUTERS, COMPUTER STORAGE DEVICES, MAGNETIC RECORDING SYSTEMS, CONTROL SYSTEMS, COMPUTER LOGIC, WIRING DIAGRAMS, MECHANICAL DRAWINGS, USSR (U)

THE TAPE-DRIVE ASSEMBLY IS DESIGNED FOR SLIDING THE MAGNETIC TAPE UNDER READ-RECORD HEADS IN ACCORDANCE WITH INSTRUCTIONS, ARRIVING FROM CONTROL BLOCK OF MEMORY UNIT. IN THE TAPE-DRIVE ASSEMBLY THERE IS REALIZED ALSO DIRECT RECORDING OF INFORMATION ON TAPE AND READING OF INFORMATION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-609 005
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
DIVISION 2. DATA SYSTEMS. (U)
DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. FOR 1 AUG-31 OCT 64.
NOV 64 25P
CONTRACT: AF19 628 500

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, COMPUTERS), (*COMPUTERS, DATA PROCESSING SYSTEMS), CIRCUITS, SWITCHING CIRCUITS, TRANSISTORS, COMPUTER STORAGE DEVICES, ELECTRONICS, ANALOG-DIGITAL COMPUTERS, DESIGN, CONTROL, INFORMATION RETRIEVAL, MAGNETIC TAPE, ALUMINUM, OXIDES, DIODES, TRIODES (U)
IDENTIFIERS: APOLLO, PRESS PROJECT, *CLEAN ROOMS (U)

CONTENTS: DIGITAL COMPUTERS; COMPUTER SYSTEMS-CURVE-DRAWING SCOPE, OPTICAL INPUT, MULTIUSER CONSOLES, SYMBOLIC PAGE-ADDRESS TRANSFORMATION; CIRCUIT DEVELOPMENT--INTEGRATED CIRCUITS, UHF SWITCHING TRANSISTORS, TRANSISTOR FLIP-FLOP MEMORY; MAGNETIC FILM ENGINEERING-CLEAN ROOM, PATTERN SCRIBING, MAGNETIC FILM CHARACTERISTICS, CONTENT--ADDRESSED MEMORY, LARGE-CAPACITY MEMORY TESTER, CIRCUIT DESIGN, PAGE-ADDRESS MEMORY; SYSTEM PROGRAMMING APPLICATIONS--CLASS-ORIENTED RING ASSOCIATIVE LANGUAGE, VARIABLY INITIALIZED TRANSLATOR FOR ALGORITHMIC LANGUAGES; COMPUTER COMPONENTS: MAGNETIC FILMS--ANISOTROPY, MAGNETO-OPTICS, TERNARY ALLOYS; ELECTRON TRANSPORT-AL-AL2O3 DIODES AND TRIODES, CONTACT POTENTIAL DURING AL2O3 GROWTH, FILM-MEMORY SENSE AMPLIFIERS; PSYCHOLOGY: AUTOMATIC PROCEDURE EXECUTOR; HUMAN INFORMATION PROCESSES--RECOGNITIVE BEHAVIOR, UNIDIMENSIONAL SIMILARITY, SIGNAL DETECTION, PERCEPTIBILITY AND MEMORABILITY; AND CONTROL RESEARCH: ON-LINE DATA STORAGE, RETRIEVAL, AND EDITING; HYBRID COMPUTER DEVELOPMENT; ESTIMATION AND CONTROL THEORY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-609 469
RCA LABS PRINCETON N J
CRYOELECTRIC RANDOM ACCESS MEMORY, PHASE II 10(9) BIT MEMORY. (U)
DESCRIPTIVE NOTE: FINAL REPT. FOR 1 MAR 63-1 MAR 64.
NOV 64 262P BURNS,L. L. ;BOSWICK,D. ;
CHRISTIANSEN,D. A. ;COSENTINO,[illegible] ;FEJER,J. ;
CONTRACT: AF30 602 3090
PROJ: 5581
TASK: 558108
MONITOR: RADC , TDR64 276

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-422 990.

DESCRIPTORS: (*CRYOGENIC STORAGE DEVICES, MANUFACTURING METHODS), (*COMPUTER STORAGE DEVICES, DIGITAL COMPUTERS), CRYOGENICS, ELECTRICAL NETWORKS, THERMODYNAMICS, THEORY, COMPUTER LOGIC, THIN FILMS (STORAGE DEVICES), SUPERCONDUCTORS (U)
IDENTIFIERS: RANDOM ACCESS MEMORY, CRYOTRONS, RYOTRONS (U)

THIS REPORT COVERS THE WORK PERFORMED UNDER PHASE II OF A CONTEMPLATED THREE-PHASE PROGRAM TO DEVELOP THE THEORY AND TECHNOLOGY NECESSARY FOR THE MANUFACTURE OF BILLION-BIT CRYOELECTRIC MEMORIES. FURTHER ADVANCES IN THE THEORETICAL UNDERSTANDING OF MEMORY OPERATION HAVE CLEARLY DELINEATED THE REQUIREMENTS OF THE FABRICATION EFFORT. TESTS OF THE MANY SAMPLES MADE DURING THE YEAR HAVE ESTABLISHED THAT THE MATCHING OF MEMORY PLANES WITH THE NECESSARY CRYOTRON TREES IS PRACTICAL. PHASE II CLOSED WITH THE SUCCESSFUL TESTING OF A 128 BY 128 MEMORY PLANE CONTAINING 16,384 CELLS AND 908 CRYOTRONS IN THE TREES. ONLY A PROBLEM WITH UNEXPECTEDLY LOW SENSE SIGNALS FROM THE CENTER PORTION OF THE PLANE PREVENTED THE STACKING OF A GROUP OF THESE PLANES. IMPROVED HIGH-SPEED EVAPORATION PLANTS HAVE GREATLY INCREASED THE YIELD OF EXPERIMENTAL SAMPLES AND IMPROVED THEIR QUALITY. CONTINUED ADVANCES IN MASK FABRICATION TECHNIQUES HAVE PROVIDED METHODS THAT ARE SUITABLE FOR THE FINER PATTERNS REQUIRED FOR 512 BY 512 AND 1024 BY 1024 PLANES. RELATED WORK ON HIGH-SPEED SELECTION TREES EMPLOYING CRYOTRONS IS REPORTED. IT IS SHOWN THAT CRYOTRONS ARE SUITABLE FOR THIS APPLICATION BUT FURTHER WORK IS NECESSARY TO REDUCE THE HEAT DISSIPATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-610 211
DAVID TAYLOR MODEL BASIN WASHINGTON D C
A TECHNIQUE FOR UTILIZING THE IBM OR THE RCA RANDOM-ACCESS MASS-MEMORY DEVICES TO STORE THE DATA BASE OF A COMMAND AND CONTROL INFORMATION PROCESSING SYSTEM. (U)
NOV 64 12P FRIEDENBERG,PAUL E. I
WALTON,THOMAS S. I
REPT. NO. DTMB-1917
PROJ: SS192 001
TASK: 7160

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMMAND AND CONTROL SYSTEMS, COMPUTER STORAGE DEVICES), (+DATA PROCESSING SYSTEMS, COMPUTER STORAGE DEVICES), DIGITAL COMPUTERS, MAGNETIC CORE STORAGE, DATA STORAGE SYSTEMS (U)
IDENTIFIERS: RANDOM-ACCESS MEMORY, UNIVAC CP-667 (U)

TWO DIFFERENT MASS MEMORIES ARE STUDIED FOR THEIR SUITABILITY TO STORE THE DATA BASE IN A COMMAND AND CONTROL INFORMATION-PROCESSING SYSTEM. THE IBM UNIT EMPLOYS METAL DISK PACKS WHEREAS THE RCA UNIT USES MAGAZINES OF PLASTIC CARDS FOR THE RECORDING MEDIUM. HOWEVER, ANALOGIES IN THEIR LOGICAL CAPABILITIES MAKE IT POSSIBLE TO USE IDENTICAL METHODS OF FILE ORGANIZATION. IT IS SHOWN THAT THE EQUIPMENT CAN BE EFFECTIVELY UTILIZED TO PROCESS FORMATED FILES ON A RANDOM-ACCESS BASIS. COMPACT INDEXES ARE GENERATED SO THAT ITEMS CAN BE QUICKLY LOCATED EITHER BY NAME OR BY CODE. THE TIMES REQUIRED FOR UPDATING AND SEARCHING SUCH FILES ARE ANALYZED, AND THE ADVANTAGES TO BE GAINED OVER CONVENTIONAL TECHNIQUES ARE INDICATED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-611 142
GENERAL ELECTRIC CO BRIDGEPORT CONN
REINFORCED PLASTIC MAGNETIC TAPE. (U)
DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 4, 1 DEC 62-31 MAR 63,
MAR 63 29P KIRK,N. ;MCBOURNIE,D. ;
LASSILA,A. ;
CONTRACT: DA36 039SC88951
PROJ: 3A99 15 003

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-287 219.

DESCRIPTORS: (*MAGNETIC TAPE, DATA STORAGE SYSTEMS), (*MAGNETIC RECORDING SYSTEMS, MAGNETIC TAPE), (*REINFORCING MATERIALS, MAGNETIC TAPE), ELASTOMERS, PLASTICS, SILICONE PLASTICS, GLASS, GLASS TEXTILES, CARBONATES, BINDERS, DATA PROCESSING SYSTEMS, TENSILE PROPERTIES, COATINGS, NITRILES, OXIDES, ANALYSIS, MANUFACTURING METHODS, RELIABILITY (ELECTRONICS), TESTS (U)

MAGNETIC TAPE BASE MATERIALS POSSESS INADEQUACIES IN CERTAIN CRITICAL DATA STORAGE APPLICATIONS. THE OBJECTIVE OF THE PROJECT IS TO DEVELOP BACKING MATERIALS WHICH WILL IMPROVE THE EFFICIENCY AND RELIABILITY OF AUTOMATIC DATA PROCESSING EQUIPMENT AND ASTROELECTRONIC RECORDING DEVICES. EVALUATIONS OF WEAVE CONSTRUCTION AND CONTINUOUS PRODUCTION PROCESSES FOR A PROMISING NEW FABRIC WERE INITIATED. INVESTIGATION OF A NEW POLYCARBONATE ELASTOMER AS A RESIN BINDER COMMENCED. PHYSICAL TESTING EMPHASIZED WET STRENGTH RETENTION AND TEAR STRENGTH MEASUREMENTS. A NITRILE SILICONE FLUID AS PRIMER EXHIBITED EXCEPTIONAL WET STRENGTH RETENTION. PRECISION SLITTING EXPERIENCE WAS GAINED. FINAL TAPE SAMPLES, THE FIRST REQUIRING SEMICONTINUOUS PROCESSING EQUIPMENT, WERE SUPPLIED. A GLASSREINFORCED MAGNETIC TAPE BASE WITH ADVANTAGES WARRANTING CONTINUED DEVELOPMENT WAS ACHIEVED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-612 941
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
DIVISION 2. DATA SYSTEMS. (U)
DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. FOR 1 NOV 64-
31 JAN 65.
FEB 65 29P FRICK,F. C. I
CONTRACT: AF19 628 500
MONITOR: ESD , TDR-65-47

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-609 005.

DESCRIPTORS: (*COMPUTERS, SCIENTIFIC RESEARCH), (*MAGNETIC TAPE, SCIENTIFIC RESEARCH), (*PSYCHOLOGY, SCIENTIFIC RESEARCH), (*DATA PROCESSING SYSTEMS, COMPUTERS), DATA PROCESSING SYSTEMS, COMPUTER STORAGE DEVICES, ANALOG-DIGITAL COMPUTERS, DIODES, ALUMINUM COMPOUNDS, OXIDES, CONTROL, TRANSISTORS, RECALL, PERCEPTION (PSYCHOLOGY), CONTROL SYSTEMS (U)
IDENTIFIERS: TX COMPUTERS, APEX (AUTOMATIC PROCEDURE EXECUTOR) (U)

CONTENTS: DIGITAL COMPUTERS---GROUP 23
COMPUTER SYSTEMS CIRCUIT DEVELOPMENT
MAGNETIC FILM ENGINEERING SYSTEM PROGRAMMING
AND APPLICATIONS COMPUTER COMPONENTS---GROUP 24
MAGNETIC FILMS ELECTRON TRANSPORT PSYCHOLOGY-
--GROUP 25 AUTOMATIC PROCEDURE EXECUTOR
HUMAN INFORMATION PROCESSES CONTROL RESEARCH---
GROUP 28 HYBRID COMPUTER SYSTEMS ESTIMATION
AND CONTROL STUDIES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-612 769
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
DESIGN ASPECTS OF MINIMAL-POWER DIGITAL
CIRCUITRY,
FEB 65 33P SCHMIDT,W. G. ICHACE,D. E. (U)
REPT. NO. GR-1965-6
CONTRACT: AF19 628 500
MONITOR: ESD , TDR-65-49

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DIGITAL COMPUTERS, CIRCUITS),(*CIRCUITS, DESIGN), (*MICROMINIATURIZATION (ELECTRONICS), CIRCUITS), (*SPACECRAFT, DIGITAL COMPUTERS), SEMICONDUCTOR DEVICES, RELIABILITY (ELECTRONICS), TRANSISTORS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES; RELAXATION OSCILLATORS, GATES (CIRCUITS), POWER
IDENTIFIERS: MINIMAL-POWER CIRCUITRY (U)
(U)

MINIMAL-POWER DIGITAL CIRCUITRY, WHILE A NECESSITY FOR SPACECRAFT OPERATION, HAS ADVANTAGES WHICH APPLY TO BOTH SPACE-BORNE AND GROUND-BASED DIGITAL DATA PROCESSING. SOME OF THE LOW-POWER DIGITAL CIRCUIT DESIGN EFFORTS ARE PRESENTED IN WHICH LINCOLN LABORATORY HAS BEEN ENGAGED FOR THE PAST FEW YEARS. THESE TECHNIQUES HAVE BEEN EMPLOYED IN A NUMBER OF SCIENTIFIC SATELLITES AND SPACE PROBES; SIMILAR DESIGNS ARE TO BE USED IN THE LINCOLN EXPERIMENTAL SATELLITE (LES). THE INFLUENCE OF NEW SEMICONDUCTOR DEVICES UPON THE MINIMAL-POWER CONCEPT IS DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-613 163
FRANKFORD ARSENAL PHILADELPHIA PA RESEARCH AND DEVELOPMENT DIRECTORATE
DEVELOPMENT OF A PARALLEL OUTPUT PRINTER FOR THE FADAC COMPUTER. (U)
DESCRIPTIVE NOTE: INTERIM REPT.,
DEC 64 47P MUNNICH,ROBERT F. ;
REPT. NO. M65-10-1
PROJ: 1W542709D336108

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: AVAILABLE COPY WILL NOT PERMIT FULLY LEGIBLE REPRODUCTION. REPRODUCTION WILL BE MADE IF REQUESTED BY USERS OF DDC. COPY IS AVAILABLE FOR PUBLIC SALE.

DESCRIPTORS: (*INPUT-OUTPUT DEVICES, DESIGN), (*TYPEWRITERS, COMPUTERS), COMPUTER LOGIC, CIRCUITS, WIRING DIAGRAMS, PROGRAMMING (COMPUTERS), OPERATION (U)
IDENTIFIERS: FADAC COMPUTER (U)

THIS REPORT CONTAINS A DESCRIPTION OF THE FUNCTIONS AND DESIGN DETAILS OF THE FADAC OUTPUT TYPEWRITER (FADOT), WHICH WAS FABRICATED SPECIFICALLY FOR LABORATORY USE WITH THE FADAC COMPUTER. THE MACHINE CONSISTS OF A MODIFIED IBM SELECTRIC INPUT/OUTPUT TYPEWRITER AND INTERFACE ELECTRONICS. LOGIC, CIRCUITRY AND OPERATION DETAILS ARE PROVIDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-619 010
CATHOLIC UNIV OF AMERICA WASHINGTON D C
RESEARCH ON THE APPLICATION OF FERRO-AND
FERRIELECTRIC PHENOMENA IN COMPUTER DEVICES. (U)
DESCRIPTIVE NOTE: FINAL REPT. FOR AUG 62-OCT 64
FEB 65 77P PULVARI,CHARLES F. 1
CONTRACT: AF33 657 8871
PROJ: 4160
TASK: 416004
MONITOR: RADC , TR-64-529

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: AVAILABLE COPY WILL NOT PERMIT FULLY LEGIBLE REPRODUCTION. REPRODUCTION WILL BE MADE IF REQUESTED BY USERS OF DDC. COPY IS AVAILABLE FOR PUBLIC SALE.

DESCRIPTORS: (*FERROELECTRIC CRYSTALS, COMPUTER LOGIC), (*COMPUTER LOGIC, FERROELECTRIC CRYSTALS), (*COMPUTER STORAGE DEVICES, FERROELECTRIC CRYSTALS), (*BISMUTH COMPOUNDS, OXIDES), DIELECTRICS, SWITCHING CIRCUITS, CAPACITORS, POLARIZATION, FERROELECTRIC MATERIALS, COMPUTERS (U)
IDENTIFIERS: TRANSPOLARIZERS, BISMUTH OXIDES (U)

THE OBJECTIVE OF THIS RESEARCH WAS TO DEMONSTRATE THAT CAPACITOR ELEMENTS COMPOSED OF FERRIELECTRICS OF THE MBO TYPE EMPLOYED AS A DIELECTRIC REPRESENT AN IMPORTANT IMPROVEMENT AS COMPARED TO ORDINARY FERROELECTRIC CAPACITORS AND THAT THEY CAN BE UTILIZED AS A LOGIC AND MEMORY DEVICE. FABRICATION TECHNIQUES OF THESE FERRIELECTRIC DEVICES ARE DISCUSSED WITH A SPECIAL EMPHASIS ON THE PREPARATION OF UNIFORMITY WHEN LARGE QUANTITIES OF SUCH DEVICES ARE FABRICATED. THE DEVELOPMENT OF FIELD CONTROLLED POLARIZATION TRANSFER DEVICES (TRANSPOLARIZERS) CONTINUED UTILIZING UNIFORM QUALITY FERRIELECTRIC CRYSTALS AS A DIELECTRIC. THE DEVELOPMENT OF VARIOUS LOGIC CIRCUITS IS PRESENTED AND FOR THE FIRST TIME A HALF ADDER WAS SUCCESSFULLY OPERATED UTILIZING CAPACITORS EXHIBITING FERROELECTRIC PROPERTIES AS SWITCHING ELEMENTS. A SMALL SECTION OF A RANDOM ACCESS MEMORY WAS CONSTRUCTED AND INVESTIGATED UTILIZING FERRIELECTRIC TRANSPOLARIZERS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-619 215
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
ON THE SYNTHESIS OF CONTROL SYSTEMS FOR AN ELECTRONIC
DIGITAL COMPUTER, (U)
APR 65 25P BRUEVICH,N. G. I
REPT. NO. FTD-TT-64-785
MONITOR: TT , 65-62215

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
AKADEMIYA NAUK SSSR. IZVESTIYA. ENERGETIKA I
TRANSPORT N4 P93-106 1961.

DESCRIPTORS: (*DIGITAL COMPUTERS, PROGRAMMING
(COMPUTERS)), (*PROGRAMMING COMPUTERS, DIGITAL
COMPUTERS), (*CONTROL SYSTEMS, SYNTHESIS), COMPUTER
LOGIC, COMPUTER STORAGE DEVICES, SIGNALS, TRIGGER
CIRCUITS, SWITCHING CIRCUITS, USSR (U)

TRANSLATION OF RUSSIAN RESEARCH: SYNTHESIS OF
CONTROL SYSTEMS FOR AN ELECTRONIC DIGITAL COMPUTER.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-616 269
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
COMPUTER TECHNOLOGY, 1963, NO. 3 (SELECTED
ARTICLES). (U)
MAY 65 50P ASCYAN,L. M. (GEVORKYAN,M. G.)
REPT. NO. FTD-TT-65-108
MONITOR: TT , 62431

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
MOSKOVSKOE VYSSHEE TEKHNICHESKOE UCHILISHCHE.
VYCHISLITEL'NAYA TEKHNIKA (USSR) NO P74-90, 103-21
1963.

DESCRIPTORS: (*DIGITAL COMPUTERS, RESONATORS),
(*COMPUTER LOGIC, RESONATORS), CIRCUITS,
SWITCHING CIRCUITS, TRIGGERING CIRCUITS,
CAPACITORS, RESISTORS, OSCILLATORS, FERRITES,
MAGNETIC CORE STORAGE, TRANSFORMERS,
DIODES(SEMICONDUCTOR), MAGNETIC TAPE, USSR,
COMPUTERS (U)
IDENTIFIERS: PARAMETRONS (U)

CONTENTS: THE PARAMETRON: AN ELEMENT IN
DIGITAL COMPUTERS, BY L. M. ASOYAN: GENERAL
INFORMATION ON PARAMETRONS: FUNDAMENTAL PROPERTIES
OF PARAMETRIC OSCILLATIONS: OPERATING PRINCIPLE OF
THE PARAMETRON: VARIABLE-INDUCTANCE PARAMETRON:
MULTIHOLE FERRITE PARAMETRONS: VARIABLE-CAPACITANCE
PARAMETRON: MAGNETIC-FILM PARAMETRON: THREE-CYCLE
AND TWO-CYCLE METHODS OF DRIVING PARAMETRONS:
CONSTRUCTION OF PARAMETRON LOGIC CIRCUITS CERTAIN
PROBLEMS IN THE INVESTIGATION OF THE PARAMETRON, BY
L. M. ASOYAN AND M. G. GEVORYKAN: CALCULATIONS
OF PARAMETRON DRIVING CURRENT AND DETERMINATION OF
SPECIFICATIONS FOR CORE MATERIAL: DETERMINING OPTIMUM
OPERATING POINT: CERTAIN WAYS TO REDUCE THE POWER
DRAWN BY THE PARAMETRON: DETERMINING THE PARAMETERS
OF THE PARAMETRON RESONANCE NETWORK: CALCULATING
THE PARAMETERS OF THE COUPLING TRANSFORMER:
DETERMINATION OF THE LARGEST NUMBER OF PARAMETRONS
THAT CAN BE CONNECTED AT THE OUTPUT OF A CONTROL
PARAMETRON: DETERMINING RISE AND FALL TIMES OF THE
SUBHARMONIC OSCILLATIONS IN THE PARAMETRON:
DETERMINING THE LARGEST NUMBER OF INPUT SIGNALS
THAT CAN BE CONNECTED AT A PARAMETRON'S INPUT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-618 991
TEXAS INSTRUMENTS INC DALLAS
FABRICATION AND TESTING OF CRYOGENIC ASSOCIATIVE
PROCESSOR PLANES. (U)
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR 5 MAY-13
DEC 64.
MAY 65 60P PRITCHARD,J. PAUL ,JR.;
REPT. NO. 08-65-11
CONTRACT: AF30 602 3423
PROJ: 5861
TASK: 558109
MONITOR: RADC , TR-65-74

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTER STORAGE DEVICES, THIN
FILMS:STORAGE DEVICES)), (*THIN FILMS:STORAGE
DEVICES), SUPERCONDUCTORS), CRYOGENICS, DATA
PROCESSING SYSTEMS, COMPUTER LOGIC, CIRCUITS (U)
IDENTIFIERS: THIN FILMS, THIN FILMS
ELECTRONICS (M)

FEASIBILITY IS ESTABLISHED OF A UNIQUE
PHOTOMASKPHOTORESIST PROCESS FOR FABRICATION OF A
120-BIT, 2560-CRYOTRON ASSOCIATIVE MEMORY PLANE. A
SET OF NINE PHOTOMASKS DEFINES THE FIVE
SUPERCONDUCTIVE AND FOUR INSULATING MATERIAL LAYERS
OF THE STRUCTURE. THE THIN FILM CIRCUITRY OCCUPIES
A 4 SQUARE INCH AREA OF A 2.4 INCH X 2.4 INCH GLASS
SUBSTRATE. TWO HUNDRED AND FIFTY SOLDER LANDS,
0.007 INCH X 0.100 INCH ON 0.014 INCH CENTERS, ARE
SUITABLY GROUPED AROUND THE SUBSTRATE PERIMETER FOR
PRESSURE CONTACT WITH THE DATA LINK. SEVEN SHORT-
FREE MEMORY PLANES WERE SUCCESSFULLY PRODUCED WITH
INTENDED SIGNAL PATH CONTINUITY, AS ESTABLISHED BY DC
TESTS AT 300K AND BELOW 9.5K. DIFFICULTIES IN
SIMULTANEOUSLY ACHIEVING SUPERCONDUCTIVE PRESSURE
CONTACT AT ALL SOLDER LANDS PRECLUDED MEMORY
OPERATION; HOWEVER, CURRENT LOOP SWITCHING AND
TRAPPING WERE DEMONSTRATED FOR ACCESSIBLE CRYOTRON
CIRCUIT SEGMENTS. SOLUTIONS TO THIS UNANTICIPATED
INTERCONNECTION PROBLEM WERE SUBSEQUENTLY CONCEIVED
AND DEMONSTRATED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-619 961
INFORONICS INC MAYNARD MASS
TEXT REPORTING AND EDITING DEVICE: COMPARATIVE OPERATIONAL PERFORMANCE. (U)
DESCRIPTIVE NOTE: FINAL REPT. FOR JUN 64-APR 65.
JUL 65 22P NUGENT,WILLIAM R. |
CONTRACT: AF30 602 3088
PROJ: 4594
MONITOR: RADC , TR-65-195

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PUNCHED TAPE, PROCESSING), DOCUMENTATION, PREPARATION, COSTS, ABSTRACTING, TIME STUDIES, COMPUTERS, TYPEWRITERS, READING, PERFORMANCE(HUMAN), MACHINES (U)
IDENTIFIERS: FLEXOWRITERS (U)

THE TEXT REPORTING AND EDITING DEVICE (TEXT EDITOR) IS A SMALL SCALE, HIGH SPEED TAPE PROCESSOR THAT WAS DEVELOPED UNDER THE INITIAL PART OF U.S. AIR FORCE CONTRACT AF30(602)-3088. THE MACHINE'S FUNCTION IS TO SPEED THE PREPARATION OF ERROR-FREE TEXT FOR COMPUTER ENTRY. BY MEANS OF THIS DEVICE, DATA ON PERFORATED TAPES MAY BE RAPIDLY CORRECTED OR UPDATED VIA SIMPLIFIED PUSHBUTTON CONTROL. THE MACHINE HAS BEEN DESCRIBED IN DETAIL IN RADC-TDR-64-31, APRIL 1964. THIS REPORT DESCRIBES THE RESULTS OF OPERATIONAL TESTING OF THE TEXT EDITOR IN THE PREPARATION OF AN EXTENSIVE MACHINE FILE OF DOCUMENT ABSTRACTS. THE OVERALL PROCESSES OF DATA PREPARATION WERE STUDIED AND TIME AND COST FIGURES WERE OBTAINED. COMPARISONS OF EDITING TIMES AND COSTS WERE MADE WITH RESPECT TO THREE OTHER SYSTEMS OF EDITING: OFF-LINE FLEXOWRITER, ON-LINE COMPUTER TYPEWRITER, AND ON-LINE COMPUTER WITH CRT DISPLAY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-620 913
MARQUARDT CORP VAN NUYS CALIF
ASSOCIATIVE TAG MEMORY. (U)
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR JUL 64-APR 65.
JUL 65 92P HAAS,RALPH W. :BLEVIS:EARL H. I
REPT. NO. 697/885/4266
CONTRACT: AF30 602 3471
PROJ: 5561
TASK: 558108
MONITOR: RADC . TR-65-178

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTER STORAGE DEVICES, FEASIBILITY STUDIES), (*PHOTOELECTRIC MATERIALS, COMPUTER STORAGE DEVICES), (*FERROELECTRIC MATERIALS, COMPUTER STORAGE DEVICES), DIGITAL COMPUTERS, DATA STORAGE SYSTEMS, COMPUTER LOGIC, FERROELECTRIC CRYSTALS, SINGLE CRYSTALS, THIN FILMS(STORAGE DEVICES), ELECTRON OPTICS, SWITCHING CIRCUITS, PHOTONS (U)
IDENTIFIERS: ASSOCIATIVE TAG MEMORY, THIN FILMS, THIN FILMS ELECTRONICS (U)

A RESEARCH AND DEVELOPMENT PROGRAM WAS CONDUCTED TO DEMONSTRATE THE PRINCIPLE FEASIBILITY OF UTILIZING FERROELECTRIC AND PHOTOCONDUCTOR ELEMENTS TO IMPLEMENT AN ASSOCIATIVE TAG MEMORY. AN ANLYTICAL STUDY WAS PERFORMED TO PROVIDE AN INSIGHT TO THE VARIOUS DESIGN TRADEOFFS OF IMPLEMENTATION. A MATERIAL EFFORT WAS DIRECTED TOWARD PRODUCING BOTH THIN FILM AND SINGLE CRYSTAL MATERIALS. A SMALL BREADBOARD MODEL WAS CONSTRUCTED WHICH DEMONSTRATED THE ABILITY OF STRING OF PHOTOCONDUCTOR AND FERROELECTRIC ELEMENTS TO PROVIDE SIGNAL INDICATION FOR VARIOUS MATCH CONDITIONS. A LOGIC UTILIZING THIS IMPLEMENTATION WAS DEVELOPED FOR A NUMBER OF INQUIRY COMMANDS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-671 088
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
MAGNETIC INTEGRATION AND DIFFERENTIATION OF ELECTRIC SIGNALS. (U)
JUN 68 9P POZENBLAT,M. A. SKASATKIN,O. G.

REPT. NO. FTD-TT-68-217
MONITOR: TT 4 AS-43958

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF AKADEMIYA NAUK SSSR. DOKLADY, V199 NO P1064-9 1964.

DESCRIPTORS: (*MAGNETIC CORE STORAGE, ANALOG COMPUTERS), (*ANALOG COMPUTERS, MAGNETIC CORE STORAGE), MAGNETIC CORES, FERROMAGNETIC MATERIALS, ELECTRIC CURRENT, SIGNALS, ELECTROMAGNETIC PULSES, INTEGRATORS(COMPUTERS), DIFFERENTIATING CIRCUITS, USSR (U)

THIS REPORT DISCUSSES THE APPLICATION OF BRANCHED MAGNETIC CORES OF FERROMAGNETIC MATERIALS, WITH A RECTANGULAR HYSTERESIS, TO ANALOG MEMORY DEVICES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-624 606 9/2 20/12
RCA LABS DIV RADIO CORP OF AMERICA PRINCETON N J
CRYOELECTRIC RANDOM ACCESS MEMORY, PHASE III. (U)
DESCRIPTIVE NOTE: FINAL REPT., VOL. 1, 1 MAR 64-31 AUG 65,
NOV 65 287P BURNS,L. L. ;
CONTRACT: AF30(602)-3030
PROJ: 5581
TASK: 558108
MONITOR: RADC , TR-65-405-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-609 469.

DESCRIPTORS: (*CRYOGENIC STORAGE DEVICES, THIN FILMS(STORAGE DEVICES)), (*COMPUTER STORAGE DEVICES, DIGITAL COMPUTERS), DATA STORAGE SYSTEMS, TIN, GRAIN STRUCTURES(METALLURGY), GEOMETRY, SUPERCONDUCTORS, CRYOGENICS, ELECTRICAL NETWORKS, COMPUTER LOGIC, THERMODYNAMICS (U)
IDENTIFIERS: RANDOM ACCESS MEMORY (U)

A PROGRAM IS DISCUSSED FOR THE DEVELOPMENT OF A LARGECAPACITY, RANDOM-ACCESS CRYOELECTRIC MEMORY. THEORETICAL STUDIES WERE UNDERTAKEN ON THE CRYOELECTRIC MEMORY. THESE STUDIES SHOWED THAT THE DETAILED ELECTRODYNAMIC BEHAVIOR OF CONTINUOUS FILM SUPERCONDUCTING MEMORIES CAN BE SPECIFIED. IT IS SHOWN THAT THE MOST IMPORTANT SINGLE PARAMETER IS THE UNIFORMITY OF THE GRAIN STRUCTURE IN THE TIN MEMORY FILM ITSELF. SIZE VARIATIONS GREATER THAN 2:1 OF THE MICROCRYSTALLITES OF TIN FORMING THE MEMORY FILM WILL MAKE IT PRACTICALLY IMPOSSIBLE TO BUILD A PLANE WITH A UNIFORMITY OF DRIVE CURRENTS THAT IS SATISFACTORY FOR PROPER OPERATION IN A MEMORY STACK. ANOTHER IMPORTANT PARAMETER IS THE GEOMETRICAL CONTROL OF THE WIDTH OF THE DRIVE AND SENSE LINES WHEN OTHER THAN CAVITY SENSING TECHNIQUES ARE USED. IT IS SHOWN THAT CAVITY SENSING WORKS QUITE SATISFACTORILY FOR SMALL STRUCTURES, BUT IS NOT USABLE FOR LARGE STRUCTURES. TWO EXPRESSIONS WERE DEVELOPED FROM DIFFERENT POINTS OF VIEW THAT GIVE ESSENTIALLY THE SAME ANSWER WITH REGARD TO THE VARIATION IN SENSE SIGNAL FOR CAVITY SENSING STRUCTURES OVER A PLANE. A PRACTICALLY EXACT SOLUTION TO THE OUTPUT FROM A LINE SENSE STRUCTURE IS DEVELOPED, AND IT IS SHOWN THAT A 1-MV SENSE SIGNAL CAN REASONABLY BE EXPECTED FOR CRYOELECTRIC MEMORY CELLS OF A SIZE SUCH THAT 10,000 CAN BE PUT IN ONE SQUARE INCH. THE VORTEX THEORY OF SUPERCONDUCTIVE (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-629 788 9/2
NAVAL ORDNANCE LAB WHITE OAK MD
THE DISAC MAGNETIC TAPE SYSTEM AND PERIPHERAL
EQUIPMENT CONTROLS. (U)
DEC 65 114P PRYOR,C. N. ;DAVIS,R. H. ;
REPT. NO. NOLTR-64-158.
TASK: ASW2-19000/21:-1/F101-10-02.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-610 052.

DESCRIPTORS: (*DIGITAL COMPUTERS, SIMULATION), (*WEAPON SYSTEMS, SIMULATION), (*MAGNETIC TAPE, DIGITAL COMPUTERS), INPUT-OUTPUT DEVICES, PUNCHED CARDS, PUNCHED TAPE (U)
IDENTIFIERS: DISAC (U)

THE REPORT DESCRIBES THE CHARACTERISTICS AND OPERATION OF THE DIGITAL INPUT-OUTPUT DEVICES ATTACHED TO THE DISAC SYSTEM. DETAILED OPERATING CHARACTERISTICS OF EACH DEVICE ARE GIVEN, FROM THE VIEWPOINT OF THE USER. DESCRIPTIONS AND COMPLETE DIAGRAMS OF ALL CONTROL CIRCUITRY ARE GIVEN TO FACILITATE SYSTEM MAINTENANCE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-630 918 5/1 9/2 17/9 19/13
20/12
LINCOLN LAB MASS INST OF TECH LEXINGTON
GENERAL RESEARCH. (U)
DESCRIPTIVE NOTE: QUARTERLY TECHNICAL SUMMARY REPT. 1
NOV 65-31 JAN 66.
FEB 66 61P FRICK,FREDERICK C. INEDZEL,V.
ALEXANDER IDODD,STEPHEN H. ;HERLIN,MELVIN A. 1
FREEDMAN,JEROME 1
CONTRACT: AF 19(628)-5167.
PROJ: AF-649L
MONITOR: ESD ; TDR-66-31

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-627 920.

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, SCIENTIFIC RESEARCH), (*RADAR, SCIENTIFIC RESEARCH), (*ENGINEERING, SCIENTIFIC RESEARCH), (*SOLID STATE PHYSICS, SCIENTIFIC RESEARCH), DIGITAL COMPUTERS, COMPUTER STORAGE DEVICES, PSYCHOLOGY, CONTROL SYSTEMS, SPACE SURVEILLANCE SYSTEMS, RADIO ASTRONOMY, MOON, PLANETS, MICROWAVE EQUIPMENT, MICROWAVE AMPLIFIERS, MILLIMETER WAVES, ANTENNA FEEDS, RADAR ANTENNAS, SEMICONDUCTOR DEVICES, OPDAR, RADAR STATIONS, GUIDED MISSILE LAUNCHERS, OPTICS, MATERIALS (U)

SUMMARIES ARE GIVEN OF PROGRESS AND RESULTS IN THE FOLLOWING RESEARCH AREAS: DIGITAL COMPUTERS (COMPUTER SYSTEMS, CIRCUIT DEVELOPMENT, MAGNETIC FILM ENGINEERING, SYSTEM PROGRAMMING AND APPLICATIONS); COMPUTER COMPONENTS (MAGNETIC FILMS, OPTICS, ELECTRON TRANSPORT); PSYCHOLOGY (MAN-COMPUTER INTERACTION, HUMAN INFORMATION PROCESSING); CONTROL RESEARCH (COMPUTATION CENTER DEVELOPMENT, HYBRID COMPUTATIONAL FACILITY); SURVEILLANCE TECHNIQUES (SPACE SURVEILLANCE, LUNAR STUDIES, PLANETARY STUDIES, ATMOSPHERIC STUDIES, RADIO ASTRONOMY); MICROWAVE COMPONENTS (HAYSTACK MICROWAVE COMPONENTS, SOLID-STATE AMPLIFIERS, MILLIMETER-WAVELENGTH PROGRAM, MODIFICATION TO TRACK ERROR HORNS); MECHANICAL ENGINEERING (HAYSTACK, SOLID STATE RESEARCH, LASER RADAR, STRUCTURES RESEARCH); PHYSICAL PLANT ENGINEERING (HAYSTACK HILL, MILLSTONE HILL); CONTROL SYSTEMS (NIKE-AJAX OPTICAL MOUNT, HAYSTACK); SOLID STATE DEVICE RESEARCH; OPTICAL TECHNIQUES AND DEVICES; MATERIALS RESEARCH; PHYSICS OF SOLIDS. (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-634 819 5/1 9/2 17/2.1 17/9
20/12
LINCOLN LAB MASS INST OF TECH LEXINGTON
GENERAL RESEARCH. (U)
DESCRIPTIVE NOTE: QUARTERLY TECHNICAL SUMMARY REPT.,
MAY 66 53P FRICK, FREDERICK C. ;
NEDZEL,V. ALEXANDER ;DODD,STEPHEN H. ;
HERLIN,MELVIN A. ;FREEDMAN,JEROME ;
CONTRACT: AF 19(628)-5167,
PROJ: AF-649L,
MONITOR: ESD TR-66-209

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-630 918.

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, SCIENTIFIC RESEARCH), (*RADAR, SCIENTIFIC RESEARCH), (*ENGINEERING, SCIENTIFIC RESEARCH), (*SOLID STATE PHYSICS, SCIENTIFIC RESEARCH), DIGITAL COMPUTERS, COMPUTER STORAGE DEVICES, PSYCHOLOGY, CONTROL SYSTEMS, SPACE SURVEILLANCE SYSTEMS, RADIO ASTRONOMY, PLANETS, MICROWAVE EQUIPMENT, LASERS, SEMICONDUCTOR DEVICES, RADAR ANTENNAS (U)
IDENTIFIERS: HAYSTACK HILL ANTENNAS, MILLSTONE RADAR (U)

SUMMARIES ARE GIVEN OF PROGRESS AND RESULTS IN THE FOLLOWING RESEARCH AREAS: DIGITAL COMPUTERS (COMPUTER SYSTEMS, CIRCUIT DEVELOPMENT, MAGNETIC FILM ENGINEERING, SYSTEM PROGRAMMING AND APPLICATIONS); COMPUTER COMPONENTS (MAGNETIC FILMS, OPTICS, ELECTRON TRANSPORT, ADVANCED CIRCUITS); PSYCHOLOGY (ON-LINE COMPUTING SERVICES FOR SCIENTISTS AND ENGINEERS, HUMAN INFORMATION PROCESSING, QUANTITATIVE METHODS); COMPUTER SYSTEMS (COMPUTATION CENTER DEVELOPMENT, HYBRID COMPUTATIONAL FACILITY); SURVEILLANCE TECHNIQUES (OPERATION, MAINTENANCE, AND IMPROVEMENTS, SPACE SURVEILLANCE, LUNAR STUDIES, PLANETARY STUDIES, ATMOSPHERIC STUDIES, RADIO ASTRONOMY, SPACE COMMUNICATION); MICROWAVE COMPONENTS (INTRODUCTION, HAYSTACK MICROWAVE COMPONENTS, SOLID-STATE AMPLIFIERS, VHF MODIFICATION TO TRADEX ERROR HORNS); MECHANICAL ENGINEERING (HAYSTACK, MILLSTONE, SOLID STATE RESEARCH, LASER RADAR, STRUCTURES RESEARCH); SOLID STATE DEVICE RESEARCH, OPTICAL TECHNIQUES AND DEVICES, MATERIALS RESEARCH, PHYSICS OF SOLIDS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-635 229 9/2 5/8
HUDSON LABS COLUMBIA UNIV DOBBS FERRY N Y
FLEXOWRITER/DIOA SYSTEM. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.
FEB 66 91P AMANN, CHARLES ;
KLERER,MELVIN ;
REPT. NO. TR-124,CU-149-66-ONR-266-PHYS
CONTRACT: NONR-266(84),

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INPUT-OUTPUT DEVICES, PROGRAMMING(COMPUTERS), PUNCHED TAPE, TYPEWRITERS, MODULES(ELECTRONIC), COMPUTER LOGIC, DATA PROCESSING SYSTEMS, COMPUTERS (U)
IDENTIFIERS: FLEXOWRITERS (U)

THE REPORT DOCUMENTS THE HARDWARE USED TO INTERFACE THE FRIDEN FLEXOWRITER TO THE GE-235 COMPUTER IN USE AT HUDSON LABORATORIES. THIS HARDWARE CAN ALSO BE USED AS A GENERAL PURPOSE INTERFACE FOR LOW SPEED DATA TRANSMISSION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-640 437 9/5 9/2
ILLINOIS UNIV URBANA COORDINATED SCIENCE LAB
MATRIX SWITCHES AND ERROR CORRECTING CODES FROM BLOCK DESIGNS. (U)
AUG 66 48P BAHL,LALIT RAI I
REPT. NO. R-314.
CONTRACT: DA-28-043-AMC-00073(E),NSF-GK-690
PROJ: DA-2001450183IF.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SWITCHING CIRCUITS, *MAGNETIC CORE STORAGE), ERRORS, COMPUTERS, CODING, DESIGN, MATRIX ALGEBRA, CORRECTIONS, COMBINATORIAL ANALYSIS (U)

METHODS OF OBTAINING MATRIX SWITCHES FROM BLOCK DESIGNS WERE FORMULATED BY SINGLETON AND NEUMANN. THE FIRST PART OF THE REPORT EXTENDS SINGLETON'S METHOD FOR DESIGNING UNIPOLAR SWITCHES TO THE DESIGN OF BIPOLAR SWITCHES. A NEW CLASS OF LOW NOISE SWITCHES IS OBTAINED BY PERMUTATION OF THE WINDING MATRIX OF NOISELESS SWITCHES AND IT IS SHOWN HOW THESE NEW SWITCHES ARE RELATED TO BLOCK DESIGNS. THE LATTER PART OF THE REPORT IS CONCERNED WITH METHODS OF OBTAINING ERROR DETECTING AND ERROR CORRECTING CODES FROM BLOCK DESIGNS. SOME OF THESE CODES ARE FOUND TO BE OPTIMAL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-640 492 9/2
CARSON LABS INC BRISTOL CONN
OPTICAL MATRIX MULTIPLIER. (U)
DESCRIPTIVE NOTE: FINAL REPT., JUL 65-JUN 66,
AUG 66 24P CARSON,ARTHUR N. ;
CONTRACT: AF 19(628)-4911,
PROJ: AF-4641,
TASK: 464104,
MONITOR: AFCRL 66-619

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-617 961.

DESCRIPTORS: (*ANALOG COMPUTERS, COMBINATORIAL ANALYSIS), (*COMPUTER STORAGE DEVICES, CRYSTALS), COLOR CENTERS, MATRIX ALGEBRA, OPTICAL PHENOMENA, COMPUTER LOGIC, DATA PROCESSING SYSTEMS, HALIDES, LASERS, SCANNING (U)
IDENTIFIERS: OPTICAL COMPUTERS, ANALOG MULTIPLIERS (U)

DEVELOPMENT WORK HAS BEEN PERFORMED ON A PARALLEL ANALOG, MATRIX MULTIPLIER FOR THE RAPID MULTIPLICATION OF VERY LARGE CAPACITY MATRICES USING OPTICAL STORAGE OF MATRIX ELEMENTS IN A COLORED CRYSTAL MEMORY AND PARALLEL OPTICAL MULTIPLICATION. THE ORIGINAL CONCEPT FOR THE SYSTEM, BASED ON THE USE OF THREE COLORED CRYSTALS (TWO FOR MATRIX-ELEMENT STORAGE, AND ONE FOR MULTIPLICATION) AND THREE WAVELENGTHS OF LIGHT FOR STORAGE, READOUT, AND MULTIPLICATION, RESPECTIVELY, WAS MODIFIED AND SIMPLIFIED. THE FINAL CONCEPT USED ONLY TWO CRYSTALS TO PERFORM THE DUAL FUNCTION OF STORAGE AND MULTIPLICATION, AND TWO COLORS OF LIGHT; IT ALSO INCORPORATED THE TECHNIQUE OF CONTINUOUS MONITORING DURING STORAGE TO ELIMINATE THE REQUIREMENT FOR LINEARITY OF COLOR CONVERSION DURING STORAGE. THE PRINCIPAL FINAL DIFFICULTY AT COMPLETION OF THE CONTRACT WAS THE INABILITY TO DEMONSTRATE ADEQUATE COLOR CONVERSION RATES IN WRITING MATRIX ELEMENTS INTO THE COLORED CRYSTAL TO ASSURE AN INTERESTING PRACTICAL DEVICE. SEVERAL PROMISING AVENUES FOR REMOVING THIS LIMITATION WITH FURTHER DEVELOPMENT WERE DESCRIBED. A LABORATORY BENCH-MODEL MATRIX MULTIPLIER WAS CONSTRUCTED AND USED TO DEMONSTRATE MATRIX ELEMENT MONITORING AND MULTIPLICATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-640 599 9/2 12/1
BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD
DIFFERENTIAL ANALYZER-ELECTRICAL ASPECTS OF
OPERATION. (U)
DEC 47 66P LYNCH,JEREMIAH I
REPT. NO. 694.
PROJ: TB2-0007.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*ANALOG COMPUTERS, ELECTRICAL
EQUIPMENT; OPERATION; INTEGRATORS(COMPUTERS),
DIFFERENTIAL EQUATIONS, ELECTRIC MOTORS,
AMPLIFIERS (U)

I. GENERAL DESCRIPTION OF ELECTRICAL COMPONENTS OF ANALYZER (A DEVICE FOR MECHANICALLY SOLVING ORDINARY DIFFERENTIAL EQUATIONS); INTEGRATORS AND ASSOCIATED CIRCUITS, TABLES AND ASSOCIATED CIRCUITS, INDEPENDENT-VARIABLE MOTOR AND ITS CONTROLS, PRINTER, AND AUXILIARY UNITS. II. EXPLANATION OF CIRCUIT DIAGRAMS; BALANCER CONTROL CIRCUIT, CIRCUITS CONNECTING THE BALANCER CONTROL AND AMPLIDYNE CABINETS TO THE MACHINE, CONNECTIONS AT INTEGRATOR AND TABLE JUNCTION BOXES, AMPLIFIER AND ASSOCIATED CIRCUITS, INDEPENDENT-VARIABLE CONTROL PANEL, PRINTER CIRCUITS, AND SAFETY DEVICES. III. PROCEDURES TO BE FOLLOWED BY THE OPERATORS IN OPERATION AND REPAIR. IV. TROUBLE SHOOTING ON AMPLIFIERS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000396

AD-644 429 9/2 9/2
NORTHWESTERN UNIV EVANSTON ILL INFORMATION-PROCESSING AND CONTROL SYSTEMS LAB
A CRYOGENIC ASSOCIATIVE MEMORY SYSTEM FOR INFORMATION RETRIEVAL. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
NOV 66 8P YAU,S. S. (YANG,C. C.)
REPT. NO. TR-66-106
CONTRACT: N00014-66-C-0020, AF-AFOSR-98-65

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN PROCEEDINGS OF THE NATIONAL ELECTRONICS CONFERENCE V22 P764-9 1966.

DESCRIPTORS: (*DATA STORAGE SYSTEMS, CRYOGENICS), (*INFORMATION RETRIEVAL, DATA STORAGE SYSTEMS), LOGIC CIRCUITS, PERFORMANCE(ENGINEERING), OPERATION (U)

THE PAPER PRESENTS A CRYOGENIC ASSOCIATIVE MEMORY SYSTEM WHICH CAN PERFORM BOTH NON-ORDERED AND ORDERED RETRIEVAL. SINCE THE OPERATIONS OF CRYOGENIC CIRCUITS ARE SLOWER THAN THAT OF MAGNETIC CORES AND CUTPOINT CELLS, THE SPEED APPEARS TO BE THE MAIN PROBLEM OF ALL CRYOGENIC ASSOCIATIVE MEMORY SYSTEMS. ATTEMPTS WERE MADE TO INCREASE THE OPERATING SPEED IN VARIOUS ASPECTS, SUCH AS MINIMIZING THE CIRCUIT INDUCTANCE, REDUCING THE NUMBER OF STAGE DELAYS, ETC. HOWEVER, FURTHER RESEARCH IN THE ORGANIZATION DESIGN SUCH AS THE DEVELOPMENT OF A HIGHER SPEED CIRCUIT FOR SUBSTITUTING THE TWO-RAIL LADDER NETWORK IS STILL REQUIRED TO INCREASE THE SPEED OF THE SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-647 247 9/2
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AERO-
ELECTRONIC TECHNOLOGY DEPT
NONDESTRUCTIVE READOUT (NDRO) FROM THIN MAGNETIC
FILMS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JAN 67 49P GREENBERG,S. IOLIVERI,F. ;
REPT. NO. NADC-AE-6640

UNCLASSIFIED REPORT

DESCRIPTORS: (*THIN FILM STORAGE DEVICES,
RESISTANCE(ELECTRICAL)), MAGNETIC FIELDS,
DATA STORAGE SYSTEMS,
RELIABILITY(ELECTRONICS), FILMS, INPUT-
OUTPUT DEVICES, FEASIBILITY STUDIES, INFORMATION
RETRIEVAL (U)
IDENTIFIERS: MAGNETORESISTIVE EFFECT, THIN FILMS,
THIN FILMS ELECTRONICS (U)

FIVE SOLID STATE PHENOMENA WERE CONSIDERED FOR
POSSIBLE USE IN NONDESTRUCTIVE READOUT (NDRO) FROM
THIN MAGNETIC FILM MEMORIES. THE PHENOMENON OF
MAGNETORESISTANCE IN MAGNETIC FILMS WAS CHOSEN AS THE
MOST PROMISING, AND STUDIES WERE MADE OF THIS EFFECT.
EXPERIMENTAL STUDIES OF THE SWITCHING
CHARACTERISTICS OF CONFIGURATIONS INVOLVING MAGNETIC
FILMS AND OTHER DEVICES, SUCH AS TUNNEL DIODES, WERE
ALSO MADE. SEVERAL EXPERIMENTAL NDRO RANDOM
ACCESS MEMORIES WERE BUILT TO DEMONSTRATE THE
FEASIBILITY OF USING MAGNETORESISTANCE. THE
ADVANTAGES OF THESE MEMORIES WERE LOW DRIVE CURRENTS
AND 3000 S/N RATIO. A NEW TECHNIQUE FOR AN
ASSOCIATIVE MEMORY WAS CONCEIVED, AND AN EXPERIMENTAL
MODEL WAS BUILT TO DEMONSTRATE FEASIBILITY.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-640 782 9/2 22/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
LARGE CAPACITY LASER MEMORY FOR SPACEBORNE
COMPUTERS. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
FEB 67 11P DLUGATCH,I. ;HANUS,S. ;
REPT. NO. SP-2669

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTER STORAGE DEVICES,
*LASERS), (*COMPUTERS, SPACEBORNE),
SCIENTIFIC SATELLITES, COMMUNICATION
SATELLITES(ACTIVE), DESIGN (U)

THE REPORT DISCUSSES THE NECESSITY FOR A SPACEBORNE COMPUTER MEMORY OF AT LEAST 10 TO THE 7TH POWER BIT CAPACITY. IT IS SHOWN THAT SUCH A DEVICE COULD MINIMIZE COMPUTER HARDWARE AND, AT THE SAME TIME, MAKE FEASIBLE SUCH DEVICES AS SPACEBORNE RANDOM-MULTIPLE-ACCESS AND SYNERGETIC SATELLITES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800996

AD-649 241 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
MEMORY UNIT. (U)
JAN 67 6P LYUBCHANSKII,M. S. I
REPT. NO. FTD-HT-67-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ZAPOMINAYUSHCHEE USTROISTVO.
UNEDITED ROUGH DRAFT TRANS. OF PATENT (USSR) 178 167.
APPL. 912746/26-24, 20 JUL 64.

DESCRIPTORS: (*COMPUTER STORAGE DEVICES,
*COMPUTERS), MAGNETIC FIELDS, WINDING,
ORIFICES, USSR (U)

A MEMORY DEVICE CONTAINING MATRICES OF MAGNETIC MULTIPLE-ORIFICE ELEMENTS WITH INTERROGATION WINDINGS PASSED THROUGH SOME OF THE OPENINGS OF THE ELEMENTS, OUTPUT WINDINGS PASSED THROUGH OTHER OPENINGS OF THE ELEMENTS, AND BIAS WINDINGS PASSED THROUGH THE SAME OPENINGS AS THE INTERROGATION WINDINGS WHICH HAS THE DISTINGUISHING FEATURE THAT, FOR THE PURPOSE OF SIMPLIFYING THE SCHEME OF CONTROL OF THE DEVICE IN EACH MATRIX DIVIDED IN TWO, THE WINDINGS OF INTERROGATION ARE PASSED THROUGH IN ONE HALF IN ACCORDANCE WITH THE BIAS WINDING, AND IN THE OTHER IN THE OPPOSITE DIRECTION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800994

AD-649 342 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
BUFFER MEMORY DEVICE. (U)
JAN 67 6P GORSHKOV,A. F. ;
KIRPICHNIKOV,V. M. ;STUNOV,M. N. ;
REPT. NO. FTD-HT-67-7

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: BUFERNOE ZAPOMINAYUSCHEE USTROISTVO. UNEDIYED ROUGH DRAFT TRANS. OF PATENT (USSR) 179 095, APPL. 907407/26-24. 22 JUN 64.

DESCRIPTORS: (*COMPUTER STORAGE DEVICES, COMPUTERS), MAGNETIC CORES, QUADRATIC PROGRAMMING, GENERATORS, USSR (U)

A BUFFER MEMORY DEVICE BASED ON FERRITE CORES WHICH CONTAINS QUADRATIC MATRICES WITH HORIZONTAL BUSES, VERTICAL BUSES, WHICH HAS THE DISTINGUISHING FEATURE THAT, FOR THE PURPOSE OF SIMPLIFYING THE DEVICE, IT CONTAINS A GENERATOR CONNECTED UP TO HORIZONTAL BUSES OF A MATRIX, WHICH ASSURES THEIR SEQUENTIAL SORTING, GENERATORS OF REGULATED FIGURES CONNECTED TO VERTICAL BUSES, AND A GENERATOR OF READING CONNECTED TO DIAGONAL BUSES ASSURING THEIR SEQUENTIAL SORTING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-649 414 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
STORAGE DEVICE, (U)
JAN 67 6P STAROS,F. G. IBERG,I. V.
IKREININ,S. I. ILASHEVSKII,R. A. I
MAKSIMOV,M. N. I
REPT. NO. FTD-HT-67-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ZAPOMINAYUSHCHEE USTROISTVO, UNEDITED ROUGH DRAFT TRANS. OF PATENT (USSR) 178 178, APPL. 940357/26-24, 25 JAN 65.

DESCRIPTORS: (*DATA STORAGE SYSTEMS, *COMPUTERS), COMPUTER STORAGE DEVICES, MICROMINIATURIZATION(ELECTRONICS), DECODING, NUMBERS, WIRE, METAL PLATES, USSR (U)

A BRIEF DESCRIPTION OF A MEMORY DEVICE BASED ON MULTIPLE-ORIFICE FERRITE PLATES WHICH CONTAINS NUMBER PLATES AND THE PLATE OF A DECODER, WHICH HAS THE DISTINGUISHING FEATURE THAT, FOR THE PURPOSE OF SIMPLIFYING THE MANUFACTURE AND THE MICROMINIATURIZATION OF THE DEVICE, THE NUMBER WIRE MADE BY THE METHOD OF PRINTING ON THE NUMBER PLATE IS JOINED WITH THE WIRE PASSING THROUGH TWO OPENINGS OF THE DECODER, AND THE NUMBER PLATES TOGETHER WITH THE PLATE OF THE DECODER ARE PLACED IN A CASSETTE COATED WITH A HEAT REACTIVE COMPOUND. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-649 416 9/2 9/1
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
SHIFT REGISTER. (U)
JAN 67 7P KHVEDYNICH,V. P. ;
POLIKARPOV,P. N. ;
REPT. NO. FTD-HT-67-12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF PATENT (USSR) 176 720. APPL. 910097/26/24 8 JUL 64.

DESCRIPTORS: (*SHIFT REGISTERS, *MAGNETIC CORES), COMPUTER LOGIC, WINDING, COMPUTERS, COMPUTER STORAGE DEVICES, USSR (U)

A SHIFT REGISTER BASED ON MAGNETIC CORES WHICH HAS THE DISTINGUISHING FEATURE THAT FOR THE PURPOSE OF INCREASING THE RAPIDITY OF ITS WORKING, EXPANSION OF THE TEMPERATURE OPERATING RANGE, AND WIDENING OF THE TOLERANCES FOR CHANGE IN THE PARAMETERS OF THE PULSES OF THE FEED CURRENTS EACH PRIMARY ELEMENT OF THE REGISTER CONTAINS TWO MEMORY CORES HAVING ON ONE CORE A FEED (MOVEMENT) WINDING AND AN INPUT WINDING THAT ARE COUNTER TO EACH OTHER, THE OTHER CORE BEING THE STANDARDIZING ONE WITH A SHIFT WINDING JOINED BY A LOOP OF CONNECTION WITH THE MEMORY CORES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-649 417 9/2 13/7
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
PNEUMATIC LONG-TERM MEMORY CELL FOR DISCRETE SIGNALS. (U)
JAN 67 7P FEDOSEEV,R. YU. ;
GOLOVANOVA,I. O. ;
REPT. NO. FTD-HT-67-13

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF PATENT (USSR) 168 943, APPL. 899097/26-24, 30 SEP 63.

DESCRIPTORS: (*COMPUTER STORAGE DEVICES, DATA STORAGE SYSTEMS), (*PNEUMATIC DEVICES, DATA STORAGE SYSTEMS), COMPUTERS, DESIGN, SIGNALS, RODS, USSR (U)

A BRIEF DESCRIPTION IS GIVEN OF A PNEUMATIC LONG-TERM MEMORY CELL FOR DISCRETE SIGNALS WHICH CONTAINS TWO PERPENDICULARLY ARRANGED SLAVE MECHANISMS CONVERTING PRESSURE INTO SHIFTING AND A LOCK, WHICH HAS THE DISTINGUISHING FEATURE THAT, FOR THE PURPOSE OF SIMPLIFYING THE DEVICE AND IMPROVING THE DEPENDABILITY, THE LOCK IS DESIGNED IN THE FORM OF A PROJECTION LOCATED ON A ROD OF THE SLAVE MECHANISM AND TWO SLOTS ARRANGED ON THE ROD OF THE OTHER SLAVE DEVICE. ENGLISH TRANSLATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-650 298 9/2 12/10
DAVID TAYLOR MODEL BASIN WASHINGTON D C
A FUNCTION CONTROL UNIT FOR USE WITH THE BUREAU OF
SHIPS ANALOG-COMPUTER BUSAC, (U)
MAY 64 22P DAVIS,HENRY B. O. I
REPT. NO. DTMB-899

UNCLASSIFIED REPORT

DESCRIPTORS: (*FUNCTIONS, CONTROL SYSTEMS),
(*INPUT-OUTPUT DEVICES, ANALOG COMPUTERS),
WAVEFORM GENERATORS, MARINE ENGINEERING, SHIP
HULLS, THEORY, OPERATION (U)

A FUNCTION CONTROL UNIT WAS DESIGNED AS A COMPONENT INSTRUMENT OF THE BUREAU OF SHIPS ANALOG COMPUTER (BUSAC). IT IS INTENDED FOR USE WITH THE BUSAC CURVE FOLLOWER, WHICH PRODUCES A FUNCTION REPRESENTING CROSS SECTIONS OF THE SHIP'S HULL; THE FUNCTION CONTROL UNIT SERVES TO MODIFY AND SUPPLEMENT THIS FUNCTION IN A KNOWN AND CONTROLLABLE MANNER. FOR EXAMPLE, IT CAN OPERATE UPON THE INPUT FUNCTION TO PRODUCE A WAVEFORM SIMULATING STATIC OR DYNAMIC CONDITIONS UNDER VARIOUS DEGREES OF LOADING, HEAVE, ROLL, OR PITCH. THIS REPORT DISCUSSES THE DESIGN AND PRINCIPLE OF OPERATION OF THE INSTRUMENT, WHICH IS KNOWN AS THE TMB TYPE 161-A FUNCTION CONTROL UNIT, AND GIVES SCHEMATIC CIRCUIT DIAGRAMS, ADJUSTMENT PROCEDURES, AND OPERATING INSTRUCTIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-650 841 9/2
COLUMB A UNIV DOBBS FERRY N Y HUDSON LABS
HARDWARE DOCUMENTATION OF AN 8-BUTTON KEYBOARD. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JAN 67 46P AMANN,CHARLES IKLERER,MELVIN
;
REPT. NO. TR-127
CONTRACT: NONR-266(84)

UNCLASSIFIED REPORT

DESCRIPTORS: (*TYPEWRITERS, *INPUT-OUTPUT DEVICES), COMPUTERS, AUTOMATIC, WIRING DIAGRAMS, PROGRAMMING(COMPUTERS), ELECTRONIC SWITCHES, ELECTRONIC RELAYS (U)
IDENTIFIERS: FLEXOWRITERS (U)

IF ONE OF EIGHT BUTTONS IS DEPRESSED THIS DEVICE WILL EMIT A SERIAL STRING OF PARALLEL 8-BIT CODES TO CAUSE TO SET OF TYPING ACTIONS IN AN INPUT-OUTPUT TYPEWRITER TERMINAL. THE 'PROGRAM' FOR EACH BUTTON IS WIRED IN AND SEQUENCED BY STEPPING SWITCHES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-652 682 9/2 17/2
BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD
BRLESC I AND II MEMORY CROSSBAR SWITCH, A HIGH SPEED
DIGITAL COMMUNICATION SYSTEM. (U)
DESCRIPTIVE NOTES: MEMORANDUM REPT.,
MAR 67 39P KLAIR,G. R. HERALD,G.
L. ;
REPT. NO. BRL-MR-1827
PROJ: RDT/E-1P923801A287

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, MULTIPLE OPERATION), (*COMMUNICATION SYSTEMS, DESIGN), MICROMINIATURIZATION(ELECTRONICS), TIME SHARING, COMPUTER LOGIC, PRINTED CIRCUITS, DATA STORAGE SYSTEMS, DIGITAL COMPUTERS (U)
IDENTIFIERS: BRLESC COMPUTER, MEMORY CROSSBAR, MULTIPROCESSING (U)

THE REPORT DESCRIBES THE DESIGN AND CONSTRUCTION OF A MICRO CIRCUIT HIGH SPEED DIGITAL COMMUNICATION SWITCHING SYSTEM TO BE USED IN A MULTI PROCESSOR COMPUTER SYSTEM. INCLUDED ARE APPLICATIONS TO TIME SHARING WITH MEMORY PROTECT FEATURES, AND BLOCK TRANSFER OF INFORMATION BETWEEN PROCESSORS AND OFF LINE EQUIPMENT. A DETAILED DESCRIPTION OF OPERATION AND LOGIC IS PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-655 404 9/5 9/2
TEXAS UNIV AUSTIN DEPT OF ELECTRICAL ENGINEERING
FILTER DESIGN FOR THE AVERAGE RESPONSE COMPUTER, (U)
67 11P FLAKE,ROBERT H. ;
COX,JEROME R. , JR;
CONTRACT: AF-AFOSR-766-67
PROJ: AF-4781
MONITOR: AFOSR 67-1623

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN 1967 SWIEEECO RECORD
NF-72 P11-9-1-9 APR 19 1967.

DESCRIPTORS: (*COMPUTERS, RESPONSE), (*LOW-PASS FILTERS, PERFORMANCE(ENGINEERING)), DESIGN, SPECIFICATIONS, BIOLOGY, MEDICINE, SAMPLING, INTERPOLATION, CALIBRATION (U)

PERFORMANCE AND DESIGN SPECIFICATIONS FOR FILTERS USED IN THE AVERAGE RESPONSE COMPUTER ARE DISCUSSED. BOTH THE OPTIMUM WIENER FILTER AND THE SIMPLE LOW-PASS R-C FILTER ARE CONSIDERED, AND THEIR RELATIVE PERFORMANCE IS COMPARED FOR THIS SPECIAL, BIOMEDICAL COMPUTER APPLICATION. DESIGN CURVES ARE PRESENTED FOR THE R-C FILTER PARAMETERS WHICH MINIMIZE THE ROOT-MEAN-SQUARED ERROR WHEN THIS FILTER IS EMPLOYED IN THE AVERAGE RESPONSE COMPUTER. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-658 046 9/2 9/1
LABORATORY FOR ELECTRONICS INC BOSTON MASS ELECTRONICS DIV
RESEARCH IN FERROMAGNETICS, PART II. (U)
DESCRIPTIVE NOTE: FINAL REPT. (ITEM 2), APR 65-MAR 66,
SEP 67 109P SPAIN,ROBERT J. ;
BATTAREL,CLAUDE P. ;JAUVTIS,HARVEY I. ;
MARINO,MICHAEL J. ;PEOPLES,PATRICK J. ;
CONTRACT: AF 19(628)-4197
PROJ: AF-5632
TASK: 563207
MONITOR: AFCRL 67-0205-REV

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES AD-655 059, FINAL REPT. SEE ALSO PART 1, AD-654 681.

DESCRIPTORS: (*FERROMAGNETIC MATERIALS, FILMS), (*COMPUTER STORAGE DEVICES, FILMS), MAGNETIC PROPERTIES, THIN FILM STORAGE DEVICES, SHIFT REGISTERS, FEASIBILITY STUDIES, COMPUTER LOGIC, LOGIC CIRCUITS (U)
IDENTIFIERS: THIN FILMS ELECTRONICS (U)

WORK HAS BEEN CARRIED OUT ON ASCERTAINING THE FEASIBILITY OF A DTPL PUSH DOWN LIST MEMORY. INVESTIGATIONS WERE MADE OF THE BASIC PUDL THIN FILM SHIFT REGISTER STRUCTURE AS WELL AS THE ASSOCIATED CONDUCTOR PATTERNS. DRIVE AND SENSE ELECTRONICS HAVE BEEN DESIGNED AND BREADBOARDED AND A NUMBER OF SYSTEM DESIGNS HAVE BEEN STUDIED AND EVALUATED. ADDITIONAL WORK IS STILL REQUIRED FOR THE OPTIMIZATION OF THE THIN FILM ELEMENTS AND FOR THE COMPLETION OF THE FEASIBILITY MODEL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-658 131 9/2 14/9
JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS LAB
COORDINATE READER AND CARD PUNCH OR TABULATOR, (U)
SEP 59 19P VANHAAGEN,RICHARD H. I
REPT. NO. CF-2279
CONTRACT: NORD-7980.

UNCLASSIFIED REPORT

DESCRIPTORS: (*FILM READERS, *DATA PROCESSING SYSTEMS), OPERATION, MAINTENANCE, PUNCHED CARDS (U)

THE EQUIPMENT WAS DESIGNED TO BE USED IN EITHER OF TWO MODES AS DICTATED BY THE REQUIREMENTS OF THE INFORMATION WHICH IS TO BE TRANSCRIBED. THE FIRST MODE IS ONE OF READING RELATIVE VALUES OF COORDINATES WHICH ARE RANDOMLY OR OTHERWISE SCATTERED ABOUT, SUCH AS PARTICLES IN A FLUID. THE POSITIONS OF THE PARTICLES MAY CHANGE AS A FUNCTION OF TIME, AND THE SUCCESSIVE READINGS WILL SHOW THEIR BEHAVIOR AND CAN BE MATHEMATICALLY ANALYZED. THIS MAY BE RECORDED ON A NUMBER OF SUCCESSIVE SINGLE-EXPOSURE FRAMES OF A PHOTOGRAPHIC FILM, OR ON ONE FRAME WITH SUCCESSIVE EXPOSURES. IN EACH OF THESE CASES BOTH COORDINATE VALUES ARE UNKNOWN. IN THE SECOND MODE, READINGS ARE MADE AT PRESCRIBED INTERVALS ALONG ONE AXIS, SUCH AS IN THE CONVERSION OF STRIP-CHART RECORDS AND OSCILLOGRAPH RECORDS TO PUNCHED CARDS, WHERE EQUAL STEPS ALONG ONE (USUALLY THE HORIZONTAL) AXIS ARE DESIRED; THE POSITION OF THE OTHER COORDINATE BEING THE INTERSECTION OF THE FIRST ONE AND THE RECORDED TRACE. INITIAL READ-OUT OF CALIBRATION TRACES ALLOWS AN INTERPOLATION BY MACHINE CALCULATION WHICH PRODUCES LINEARIZED DATA. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-658 189 9/2 9/5
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS MADRID (SPAIN) INSTITUTO DE ELECTRICIDAD Y AUTOMATICA
RESEARCH ON FERRORESONANT COMPUTER AND CONTROL DEVICES. (U)
DESCRIPTIVE NOTE: TECHNICAL NOTE.
JUL 60 115P SANTESMASES,J. GARCIA I
REPT. NO. TN-3
CONTRACT: AF 61(514)-1294

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERS, *MAGNETIC RESONANCE), (*CONTROL SYSTEMS, MAGNETIC RESONANCE), (*ELECTRICAL NETWORKS, MAGNETIC RESONANCE), BIBLIOGRAPHIES, VARACTOR DIODES, INDUCTANCE, COMPUTER LOGIC, INVERTER CIRCUITS, LOGIC CIRCUITS, SHIFT REGISTERS, RELAXATION OSCILLATORS (U)

IN CHAPTER 1 THE LIST OF BIBLIOGRAPHY GIVEN IN THE TWO PREVIOUS TECHNICAL NOTES HAS BEEN EXTENDED UP TO SEVENTY NINE PAPERS. IN THIS LIST A NEW GROUP OF PAPERS CORRESPONDING TO THE USE OF VARIABLE CAPACITANCE DIODES IN NON-LINEAR RESONANT CIRCUITS, HAS BEEN MADE UP. CHAPTER 2 DEALS ON THE FERRORESONANT CIRCUITS DEVELOPED. SOME NEW SYSTEMS TO OBTAIN THE TRANSFER OF INFORMATION BETWEEN FERRORESONANT ELEMENTS IN WHICH DEMODULATION OF A.C. SIGNALS IS NOT NEEDED HAVE BEEN DESCRIBED. A CONSEQUENCE IS THE ELIMINATION OF THE CONTROL WINDING ON THE INDUCTOR CORES. EACH OF THESE SYSTEMS ALLOW ONE TO DEVELOP A SYSTEM OF CIRCUIT LOGIC. IN CHAPTER 3, THE WORK PERFORMED ON THE VARIABLE CAPACITANCE DIODE NONLINEAR RESONANT CIRCUIT IS DESCRIBED. (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-698 190 9/2 9/8
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS MADRID (SPAIN) INSTITUTO DE ELECTRICIDAD Y AUTOMATICA
RESEARCH ON FERRORESONANT COMPUTER AND CONTROL DEVICES. (U)
DESCRIPTIVE NOTE: REPT. FOR 1 APR 68-31 MAR 69, APR 69 184P SANTESMASES,J. GARCIA I
REPT. NO. TN-2
CONTRACT: AF 61(514)-1234

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-698 217 AND AD-698 189.

DESCRIPTORS: (*COMPUTERS, *MAGNETIC RESONANCE), (*CONTROL SYSTEMS, MAGNETIC RESONANCE), (*ELECTRICAL NETWORKS, MAGNETIC RESONANCE), RELAXATION OSCILLATORS, MAGNETIC CORE STORAGE, LOGIC CIRCUITS, SHIFT REGISTERS, INDUCTANCE, COMPUTER LOGIC, DELAY CIRCUITS, MAGNETIC PROPERTIES, BIBLIOGRAPHIES (U)

IN CHAPTER 1 THE LIST OF BIBLIOGRAPHY ON FERRORESONANCE GIVEN IN TECHNICAL NOTE NO. 1 HAS BEEN EXTENDED TO SIXTY-FIVE PAPERS. CHAPTER 2 IS DEVOTED TO THE TESTS CARRIED OUT ON FERRITE MATERIALS, THE REDUCTION OF THE SIZE OF CORES, AND THE OBTENTION OF SHAPES MORE CONVENIENT FOR USE IN FERRORESONANCE AT FREQUENCIES UP TO TEN MEGACYCLES. IN CHAPTER 3 THE FERRORESONANT DEVICES ARE DESCRIBED. WITH THE SERIES CIRCUIT WITHOUT POLARIZATION AS A BASIS, COMPLETE SYSTEMS OF CIRCUIT LOGIC HAVE BEEN DEVELOPED. THE DELAY UNIT, THE HALF-ADDER, A SERIAL FULL ADDER, AND SOME OTHER CIRCUITS WHICH MAKE USE OF THE OPERATING PRINCIPLES OF THE DELAY UNIT AND HALF-ADDER, ARE DESCRIBED. THE EXPERIMENTAL RESULTS PRESENTED HAVE BEEN OBTAINED WITH A CARRIER FREQUENCY OF TWO MEGACYCLES, AND PULSE REPETITION RATES RANGING BETWEEN 200.000 AND 300.000 PULSES PER SECOND. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-688 217 9/2 9/9
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS MADRID (SPAIN) INSTITUTO DE ELECTRICIDAD Y AUTOMATICA
RESEARCH ON FERRORESONANT COMPUTER AND CONTROL DEVICES. (U)
DESCRIPTIVE NOTE: TECHNICAL NOTE NO. 1, 1 APR 57-31 MAR 58.
MAR 58 16DP SANTESMASES,J. GARCIA I
CONTRACT: AF 61(514)-1234

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-688 190 AND AD-688 189.

DESCRIPTORS: (*COMPUTERS, *MAGNETIC RESONANCE), (*CONTROL SYSTEMS, MAGNETIC RESONANCE), (*ELECTRICAL NETWORKS, MAGNETIC RESONANCE), BIBLIOGRAPHIES, RELAXATION OSCILLATORS, INDUCTANCE, LOGIC CIRCUITS, MAGNETIC CORE STORAGE, WIRING DIAGRAMS, MATHEMATICAL ANALYSIS, MAGNETIC PROPERTIES (U)

IN CHAPTER 1, A LIST IS GIVEN OF FIFTY NINE PUBLICATIONS, WHICH DEAL WITH THE FERRORESONANCE PHENOMENON AND ITS APPLICATION TO CIRCUITS USED IN COMPUTERS. THE INFORMATION FOUND IN THEM WAS CLASSIFIED INTO THREE GROUPS, NAMELY, FERRORESONANT CIRCUIT ANALYSIS, FERRORESONANT FLIP-FLOP ANALYSIS, AND EXPERIMENTAL FERRORESONANT CIRCUITS FOR APPLICATION TO COMPUTERS. CHAPTER 2 IS INTENDED TO ESTABLISH A FIGURE OF MERIT FOR MAGNETIC MATERIALS, WITH RELATION TO FERRORESONANCE. FOR THIS PURPOSE, CHARACTERISTICS WERE FIRST DETERMINED FOR THE SMALL-SIZE CORES AVAILABLE, WORKING THEN IN TERMS OF REDUCED CHARACTERISTICS WHICH ARE INDEPENDENT ON CORE SIZE AND NUMBER OF TURNS; FINALLY, A NEW FIGURE OF MERIT IS INTRODUCED, FROM CERTAIN CONSIDERATIONS ON THE PHENOMENON OF FERRORESONANCE. IN CHAPTER 3, WE GIVE SOME ORIGINAL RULES FOR TWO-BRANCH FLIP-FLOP DESIGN, WORKING FROM DATA WHICH ARE EASILY OBTAINED IN THE LABORATORY. ACCOUNT IS ALSO GIVEN OF EXPERIMENTAL RESULTS OBTAINED ON TWO-BRANCH, NO-POLARIZATION FLIP-FLOPS, AND FOUR-BRANCH RING COUNTERS, OPERATING UNDER A SINGLE PULSE SEQUENCE. IN ADDITION, A STUDY IS DEVELOPED OF THE ONE-BRANCH FLIP-FLOP, WITH POLARIZATION, WORKING UNDER TWO PULSE SEQUENCES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-658 379 9/2
JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS LAB
A DIRECT BINARY DIVIDER FOR SPECIAL PURPOSE DIGITAL COMPUTERS. (U)
JAN 61 19P ZINK,H. O. I
REPT. NO. CF-2916
CONTRACT: NORD-7386

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIGITAL COMPUTERS, BINARY ARITHMETIC), (*COMPUTER LOGIC, *BINARY ARITHMETIC), NUMERICAL METHODS AND PROCEDURES, SHIFT REGISTERS, REAL TIME, ITERATIVE METHODS (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE REPORT DESCRIBES THE DIVIDER CIRCUIT DEVELOPED IN AN ATTEMPT TO SOLVE THE PROBLEM OF DIVIDING WITHOUT USING ITERATIVE TECHNIQUES AND WITHOUT UNDULY SLOWING DOWN THE COMPUTATION PROCESS OF A DIGITAL COMPUTER. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-658 727 9/2 20/11
COLUMBIA UNIV NEW YORK DEPT OF MECHANICAL ENGINEERING
THREE-DIMENSIONAL ELASTICITY THEORY FOR FLAT-PLATE MEMORY ELEMENTS SUBJECTED TO SPACE-VARIABLE NORMAL TRACTION. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUL 67 69P ELROD,H. G. ISOOD,DES R.

REPT. NO. TR-9
CONTRACT: NONR-4259(14)
PROJ: NR-062-360

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MECHANICAL AND FLUID DYNAMICAL ASPECTS OF PROBLEMS ASSOCIATED WITH COMPUTER TECHNOLOGY. TASK 1. TAPE TRANSPORT. SEE ALSO AD-802 009.

DESCRIPTORS: (*COMPUTER STORAGE DEVICES, *ELASTICITY), BOUNDARY VALUE PROBLEMS, DIGITAL COMPUTERS, STRESSES, STRAIN(MECHANICS), FLAT PLATE MODELS, BENDING, MATHEMATICAL ANALYSIS (U)

MANY OF THE CONTEMPORARY MEMORY ELEMENTS USED IN HIGH-SPEED DIGITAL COMPUTERS ARE FLAT IN THE UNSTRESSED STATE. THE PRESENT WORK IS PART OF A REVIEW AND ENLARGEMENT OF APPLICABLE ELASTICITY THEORY IN CASES OF SMALL DEFORMATION WITH SPACE-VARIABLE NORMAL TRACTION OR PRESSURE. (1) ALL FLAT PLATE RESULTS ARE DERIVED DIRECTLY WITH THREE-DIMENSIONAL LINEAR ELASTICITY THEORY - NONE OF THE CONVENTIONAL INTERMEDIATE ASSUMPTIONS BEING EMPLOYED. (2) WITHIN THE EXACT THEORY, CERTAIN AUXILIARY FUNCTIONS ARE SHOWN TO SATISFY CONVENTIONAL THIN-PLATE DIFFERENTIAL EQUATIONS. IN TERMS OF THESE FUNCTIONS, DISPLACEMENTS, STRESSES, STRESS RESULTANTS AND COUPLES ARE SIMPLY EXPRESSED BY FORMULAS WHICH ARE EITHER EXACT, OR ASYMPTOTICALLY ACCURATE. BOUNDARY CONDITIONS ARE MATHEMATICALLY EQUIVALENT TO THOSE OF MICHELL PLATE THEORY. (3) SOLUTIONS OBTAINED FROM THE PRESENT THEORY ARE 'INTERIOR SOLUTIONS' IN THE SENSE OF FRIEDRICHS AND DRESSLER (3) AND ACCOMMODATE KIRCHOFF EDGE CONDITIONS. THEIR USE WITH MORE GENERAL EDGE CONDITIONS WILL BE THE SUBJECT OF A LATER REPORT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-659 264 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
USING AN APM-1 PRINTER AT THE COMPUTER OUTPUT. (U)
MAR 67 10P KHODAKOV,V. E. ;
REPT. NO. FTD-HT-66-493
MONITOR: TT 67-62988

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF AVTOMATIKA I PRIBOROSTROENIE (USSR) N2 P31-3 1965. PRIMENENIE PECHATAYUSHCHEI MASHINKI APM-1 V USTROISTVAKH VYVODA VYCHISLITELNYKH MASHIN.

DESCRIPTORS: (*INPUT-OUTPUT DEVICES, COMPUTERS), (*PRINTING, COMPUTERS), ELECTROSTATICS, CONTROL SYSTEMS, COMPUTER LOGIC, PERFORMANCE(ENGINEERING) (U)

THE DEVELOPMENT AND TEST RESULTS OF THE FIRST SOVIET ON-THE-FLY PRINTER APM-1 ARE REPORTED. THE HIGH-SPEED LINE PRINTER USES A CONTINUOUSLY ROTATING PRINT WHEEL CARRYING 24 CHARACTERS; THEY ARE SELECTED BY A 5-DIGIT BINARY CODE. FAST-ACTING HAMMERS PRINT THE CHARACTERS. THE PRINTER IS CONNECTED TO THE COMPUTER VIA A CONTROL UNIT WHICH COMPRISES FERRITE-DIODE LOGICAL ELEMENTS AND SEMICONDUCTOR AMPLIFIERS. FUNCTIONAL AND PRINCIPAL CIRCUITS OF THIS UNIT ARE PRESENTED AND THEIR OPERATION IS BRIEFLY EXPLAINED. DURING THE TWO-YEAR OPERATION OF AN APM-1 ON-THE-FLY PRINTER PROTOTYPE, NO FAILURE OF A MAJOR COMPONENT OCCURRED.(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-660 730 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
PUNCHED-TAPE DATA INPUT UNIT WITH CIRCUITAL
CONVERSION OF NUMBERS. (U)
APR 67 15P MAKHMUDOV,YU. A. ;BEKIR-
ZADE,N. B. ;
REPT. NO. FTD-HT-66-795

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
VOPROSY VYCHISLITENOI MATEMATIKI I TEKHNIKI (USSR)
V3 P161-70 1965.

DESCRIPTORS: (*INPUT-OUTPUT DEVICES, *PUNCHED
TAPE), COMPUTER STORAGE DEVICES, SPECIAL PURPOSE
COMPUTERS, USSR (U)

THE ARTICLE DESCRIBES AN INPUT DEVICE DEVELOPED FOR ENTERING INFORMATION FROM PUNCHED TAPE IN THE WORKING STORAGE OF A SPECIAL-PURPOSE COMPUTER AND PROVIDING CIRCUIT DECIMAL-TO-BINARY CONVERSION. THE DEVICE EMPLOYS SERIES-PRODUCED FERRITE-DIODE MAGNETIC ELEMENTS. NUMBERS ARE RECORDED ON THE PUNCHED TAPE IN THE CODE OF THE ST-39 APPARATUS. THE CONVERSION SCHEME IS BASED ON AN ALGORITHM USING A TABLE OF CONSTANTS. THE CONVERSION REPRESENTS THE SERIAL ADDITION OF MULTIPLE CONSTANTS. THERE IS AN INTERMEDIATE CONVERTER FROM THE ST-39 CODE TO BINARY DECIMAL CODE. THE ARTICLE GIVES A BLOCK DIAGRAM OF THE INPUT DEVICE, AS WELL AS A DETAILED DESCRIPTION OF ITS BASIC CIRCUIT. THE CIRCUIT SPEED PERMITS THE ENTRY OF 1,000 BITS (ROWS) PER SECOND, WHICH MAKES IT POSSIBLE TO USE IT WITH THE PHOTOELECTRIC METHOD OF PUNCHED TAPE READING. 156 ELEMENTS ARE USED TO CONSTRUCT THE DEVICE, INCLUDING 64 LOGICAL AND 92 SIMPLE ELEMENTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-660 792 9/2
OREGON STATE UNIV CORVALLIS COMPUTER CENTER
EVALUATION OF THREE CONTENT-ADDRESSABLE MEMORY SYSTEMS USING GLASS DELAY LINES. (U)
DESCRIPTIVE NOTE: DOCUMENT.
JUL 67 71P RUX,PETER T. I
REPT. NO. C-67-9
CONTRACT: NONR-1286(11)

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTER STORAGE DEVICES, DELAY LINES), GLASS, DIGITAL COMPUTERS, COMPUTER LOGIC, PERFORMANCE(ENGINEERING) (U)

EVALUATION IS MADE OF THREE CONTENT-ADDRESSABLE (ASSOCIATIVE) DIGITAL MEMORY SYSTEM ORGANIZATIONS USING A CIRCULATING MEMORY. SPECIFIC REFERENCE IS MADE TO GLASS DELAY-LINE MEMORIES SINCE THEY OFFER THE BEST SOLUTION TO HIGH-SPEED CIRCULATING STORAGE. THE MEMORY DESIGNS ARE EACH DEVELOPED AS A POSSIBLE MEMORY ADDITION TO THE NEBULA COMPUTER AT OREGON STATE UNIVERSITY. A USEFUL COMMAND SET IS ESTABLISHED ALONG WITH A DISCUSSION OF APPLICATIONS OF SUCH A MEMORY SYSTEM. THEN THE THREE SEPARATE DATA ORGANIZATIONS ARE EXPLAINED AND THE LOGICAL DESIGN AND HARDWARE REQUIREMENTS FOR EACH SYSTEM TYPE ARE DETAILED AND COMPARED. A CIRCULATING MEMORY IS UTILIZED BECAUSE IT ALLOWS VERY INEXPENSIVE IMPLEMENTATION OF CONTENT-ADDRESSING CAPABILITY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800996

AD-660 847 9/2 9/5
MELPAR INC FALLS CHURCH VA
DEVELOPMENT OF AN INPUT/OUTPUT TECHNIQUE FOR
INTEGRATED CIRCUIT SIMULATION COMPUTERS. (U)
DESCRIPTIVE NOTE: FINAL REPT. JAN-DEC 66,
JUL 67 67P MCNEAL,RICHARD N. ;
CONTRACT. AF 33(615)-2449
PROJ: AF-6114
TASK: 611408
MONITOR: AMRL TR-67-74

UNCLASSIFIED REPORT

DESCRIPTORS: (*INPUT-OUTPUT DEVICES,
COMPUTERS), (*SIMULATION, COMPUTERS),
(*INTEGRATED CIRCUITS, COMPUTERS),
SERVOMECHANISMS, MODULATORS, ANALOG SYSTEMS,
LOGIC CIRCUITS, SHIFT REGISTERS,
PERFORMANCE(ENGINEERING), ANALOG-TO-DIGITAL
CONVERTERS, DIGITAL-TO-ANALOG CONVERTERS, COMPUTER
LOGIC (U)

AN INPUT/OUTPUT TECHNIQUE WAS DEVELOPED TO
INTERFACE BETWEEN INTEGRATED CIRCUIT COMPUTERS AND
SIMULATION SYSTEMS. FOUR GENERAL TYPES OF SIGNALS
ARE PROCESSED BY THIS INPUT/OUTPUT SYSTEM:
DISCRETE INPUTS, DISCRETE OUTPUTS, ANALOG INPUTS,
AND ANALOG OUTPUTS. THIS STUDY HAS DETERMINED THAT
INTEGRATED CIRCUITS ARE READILY ADAPTABLE TO
PERFORMING THE DIGITAL FUNCTIONS IN THE INPUT/OUTPUT
SYSTEM, BUT THE ANALOG SIGNAL CONVERSION REQUIREMENTS
OF THESE SYSTEMS ARE NOT WITHIN PRESENT LINEAR
INTEGRATED CIRCUIT CAPABILITIES. IT IS ANTICIPATED
THAT THE LINEAR INTEGRATED CIRCUIT DEVELOPMENT WILL
HAVE PROGRESSED TO THE POINT OF MAKING INTEGRATED
CIRCUIT CONVERTERS FEASIBLE WITHIN THE NEXT YEAR.
THE BASIC SYSTEM REQUIREMENTS AND THE OVERALL
SYSTEM REQUIREMENTS AND THE OVERALL SYSTEM DESIGN
TECHNIQUE FOR AN INPUT/OUTPUT SYSTEM ARE DISCUSSED IN
DETAIL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-662 361 9/2
HONEYWELL INC MINNEAPOLIS MINN SYSTEMS AND RESEARCH CENTER
ASSOCIATIVE TECHNIQUES FOR CONTROL FUNCTIONS IN A MULTI-PROCESSOR SIMULATION INVESTIGATION. (U)
DESCRIPTIVE NOTE: FINAL REPT. JAN-AUG 67,
NOV 67 147P GONZALES,R. ;GUNDERSON,D. C. ;TIMMONS,J. A. ;
REPT. NO. 12059-FR1
CONTRACT: F30602-67-C-0179
PROJ: AF-5581
TASK: 558109
MONITOR: RADC TR-67-300

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA STORAGE SYSTEMS, CONTROL), (*DATA PROCESSING SYSTEMS, DESIGN), COMPUTER PROGRAMS, SUBROUTINES, PERFORMANCE(ENGINEERING), SIMULATION (U)
IDENTIFIERS: MULTIPROCESSING, ASSOCIATIVE MEMORY, ASSOCIATIVE PROCESSOR (U)

A SIMULATOR OF A 'MULTIPROCESSOR WITH ASSOCIATIVE CONTROL' WAS DEVELOPED FOR PURPOSES OF EVALUATING AND STUDYING THE USE OF ASSOCIATIVE MEMORIES FOR EXECUTIVE CONTROL FUNCTIONS IN MULTIPROCESSORS. A JOB GENERATOR WAS ALSO DEVELOPED TO PROVIDE A SOURCE OF JOBS TO USE IN THE SIMULATION STUDIES. SOME PRELIMINARY RESULTS WERE OBTAINED IN TERMS OF SYSTEM EFFICIENCY AND REQUIREMENTS ON THE ASSOCIATIVE MEMORIES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-662 762 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
INPUT AND OUTPUT DEVICES FOR ELECTRONIC
COMPUTERS,
JUL 67 8P BONDAREV,A. M. ; (U)
REPT. NO. FTD-HT-23-842-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
STANDARTIZATSIYA (USSR) N3 P44-5 1964.

DESCRIPTORS: (*INPUT-OUTPUT DEVICES;
COMPUTERS), PUNCHED CARDS, PUNCHED TAPE,
STANDARDS, USSR
(U)

A NEW STANDARD IS EXTENDED HERE TO PUNCH-CARD AND PUNCH-TAPE INPUT AND OUTPUT DEVICES FOR GENERAL-PURPOSE ELECTRONIC COMPUTERS. THE NOTATION, NOMENCLATURE AND CHARACTERISTICS OF THESE DEVICES ARE SPECIFIED, AS ARE THEIR PRINCIPAL PARAMETERS: TECHNICAL RATE OF LOADING AND EXTRACTION OF INFORMATION IN START-STOP AND CONTINUOUS REGIMES; CAPACITY OF THE LOADING MAGAZINE AND RECEIVING POCKET FOR THE CARDS; TECHNICAL RATE OF PRINT-OUT FOR SEQUENTIAL ALPHANUMERIC PRINTING, LINE-PARALLEL ALPHANUMERIC PRINTING, AND LINE-PARALLEL DIGITAL PRINTING. RULES ARE GIVEN FOR THE NUMBER OF DIGITS IN A LINE, THE SPACING OF PRINT, AND CERTAIN OTHER PRINT-OUT PARAMETERS. THE GOST (ALL-UNION STATE STANDARD) 10525-63 ALSO SPECIFIES THE DIGITS AND SIGNS WHICH SHOULD BE USED IN INPUT AND OUTPUT DEVICES, ON LEAVING TO CUSTOMERS THE RIGHT TO SET UP THEIR OWN COMBINATIONS OF THE SPECIFIED SYMBOLS AND INTRODUCE NEW SIGNS. THE PURPOSE OF THIS STANDARD IS TO ESTABLISH THE UNIFICATION AND INTERCHANGEABILITY OF INPUT AND OUTPUT DEVICES. STANDARDS FOR 'ALPHANUMERIC CODES FOR PUNCH CARDS AND PUNCH TAPES AND PERFORATED TAPES. THE SHAPES, BASIC PARAMETERS, SIZES AND POSITIONS OF HOLES ON A PUNCH TAPE,' HAVE BEEN DRAFTED AND APPROVED.
(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-662 793 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
COMPUTERS WITH CORE-DIODE ELEMENTS. (U)
JUN 67 14P MAKHMUDOV,YU. A. I
REPT. NO. FTD-HT-67-48

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF AKADEMIYA NAUK AZERBAIDZHANSKOI SSR, BAKU. IZVESTIYA. SERIYA FIZIKO-TEKHNICHESKIKH I MATEMATICHESKIKH NAUK. N6 P27-35 1964.

DESCRIPTORS: (*MAGNETIC CORE STORAGE, DIGITAL COMPUTERS), LOGIC CIRCUITS, COMPUTER STORAGE DEVICES, MAGNETIC RECORDING SYSTEMS, VERY LOW FREQUENCY, USSR (U)

THE AUTHOR DESCRIBES A DIGITAL COMPUTER DEVELOPED AT THE COMPUTATION CENTER OF THE AZERBAYDZHAN ACADEMY OF SCIENCES, USING SEQUENTIAL AND IN SOME CASES PARALLEL-SEQUENTIAL UNITS. THE COMPUTER EMPLOYS COMMERCIALLY PRODUCED FERRITE-DIODE ELEMENTS, OPERATING AT A LOW TIMING FREQUENCY (20 KCS). THE ARTICLE DESCRIBES THE PRINCIPLES UNDERLYING INDIVIDUAL UNITS OF THE COMPUTER, WHICH CAN BE USED EITHER INDEPENDENTLY OR AS PARTS OF OTHER COMPUTER SYSTEMS. ALL THE COMPUTER UNITS OPERATE WITH 24-DIGIT BINARY NUMBERS (INCLUDING THE SIGN DIGIT) WITH FIXED RADIX. THE UNITS DESCRIBED ARE A UNIVERSAL ARITHMETIC UNIT OF SEQUENTIAL ACTION, THE INFORMATION INPUT UNIT, THE EXTERNAL MAGNETIC-TAPE MEMORY, AND THE OUTPUT UNIT. THE COMPUTER EMPLOYS A TOTAL OF 88 SIMPLE AND 90 LOGIC ELEMENTS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-662 838 9/2 12/1
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
MATRIX COMPUTER FOR CALCULATING CORRELATION
FUNCTIONS. (U)
JUL 67 14P ULIN,O. V. IPETUNIN,V.
K. I
REPT. NO. FTD-HT-23-830-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
AVTOMATICHESKII KONTROL I ELEKTRICHESKIE IZMERENIYA
(USSR) V2 P78-83 1964.

DESCRIPTORS: (*STATISTICAL FUNCTIONS, PROBLEM
SOLVING), (*DATA PROCESSING SYSTEMS, STATISTICAL
FUNCTIONS), APPROXIMATION(MATHEMATICS),
MAGNETIC CORE STORAGE, AMPLIFIERS, CORRELATORS,
USSR (U)

A SEMI-AUTOMATIC CORRELATOR THAT USES A MATRIX
NETWORK FOR THE MULTIPLICATION OPERATION IS
DESCRIBED. THE SOURCE DATA IN THE FORM OF A
NUMERICAL TABLE IS INSERTED INTO THE CORRELATOR BY A
KEYBOARD DEVICE. THE CORRELATOR INCLUDES A
MULTIPLICATION MATRIX DESIGNED WITH SQUARE-LOOP
FERRITES, TRANSISTORIZED BLOCK GENERATORS AND
AMPLIFIERS, AND ALSO FERRITE-DIODE REGISTERS WITH A
COMPENSATING CORE IN EACH CELL. A BLOCK DIAGRAM
AND A PRINCIPAL CIRCUIT OF THE CORRELATOR ARE
PRESENTED, AND ITS OPERATION IS DESCRIBED. THE
MAXIMUM RELATIVE ERROR DEPENDS ON THE NUMBER OF
DISCRETE LEVELS IN THE MULTIPLICATION MATRIX. THE
CORRELATOR SPEED OF OPERATION IS DETERMINED BY THE
PRODUCT READ TIME: AVERAGE TIME OF ONE READING IS
0.1-0.15 SEC. (U)

DDC REPO BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-463 603 9/2
MELLON INST PITTSBURGH PA
FELLOWSHIP ON COMPUTER COMPONENTS NO. 247. (U)
DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 6, 11 JAN-10 APR 62.
APR 62 93P BOWMAN,J. R. (SCHWERTZ,F. A. (MILCH,A. (MOFFAT,B. (STEINBACK,R. T.)

CONTRACT: AF 19(122)-276

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERS, SCIENTIFIC RESEARCH), ELECTRONIC SWITCHES, SILICON CARBIDES, SHEETS, RUBBER, BONDING, NONLINEAR SYSTEMS, CRYSTAL RECTIFIERS, LIGHT PULSES, DIGITAL SYSTEMS, COMPUTER STORAGE DEVICES, OPTICAL EQUIPMENT, CIRCUITS, ELECTROLUMINESCENCE, PHOSPHORESCENT MATERIALS (U)

THE STORY OF THE SILICON CARBIDE FUNCTION SWITCH AND FUNCTION SWITCH BLANKS IS RELATED IN SECTION I OF THE REPORT. THE SECTION, ENTITLED 'NONLINEAR SWITCHING ELEMENTS', DEMONSTRATES THAT THE ASYMMETRIC RESISTANCE CHARACTERISTICS OF DIODE RECTIFIERS ARE NOT ESSENTIAL TO THEIR APPLICATION AS SWITCHING ELEMENTS, AND THAT ANY TWO-TERMINAL PASSIVE NETWORK POSSESSING A SUITABLE SYMMETRIC, NONLINEAR, VOLTAGE-CURRENT CHARACTERISTIC CURVE MAY BE EMPLOYED AS A SWITCHING ELEMENT. SECTION V ON THE 'MORPHOLOGY OF ELECTRONIC CIRCUITS' COMPRISES A DISCUSSION OF THE POSSIBILITY OF USING FLAT SHEETS OF PASSIVE AND ACTIVE ELEMENTS IN THE FABRICATION OF ELECTRONIC CIRCUITS. SECTION II ENTITLED 'OPTICAL ELEMENTS FOR COMPUTERS' SUMMARIZES CERTAIN ADVANTAGES TO BE GAINED BY EMPLOYING LIGHT PULSES RATHER THAN ELECTRICAL PULSES FOR THE HANDLING OF DIGITAL INFORMATION. EFFORTS ARE UNDERWAY TO PRODUCE BISTABLE OPTICAL ELEMENTS FOR THE STORAGE OF DIGITAL INFORMATION. SECTION III IS A FIRST REPORT ON ACTIVITIES POINTED IN THIS DIRECTION. SECTION IV DEALS WITH THE DESIGN AND CONSTRUCTION OF A CODED-DECIMAL MULTIPLIER AND, MORE GENERALLY, WITH A TECHNIQUE FOR THE STORAGE OF A FUNCTION OF TWO VARIABLES. SECTION VI CONTAINS SOME DATA ON THE SPECTRAL DISTRIBUTION OF THE LIGHT EMITTED BY AN ELECTROLUMINESCENT PHOSPHOR. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-663 916 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
DEVICE FOR READING AND PRINTING ALPHABET DIGITAL
INFORMATION FROM PERFORATION CARDS(USP-1). (U)
AUG 67 13P SHTURMAN,YA. P. ;
REPT. NO. FTD-HT-66-582

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
NAUCHNO-TEKHNICHESKAYA INFORMATSIYA (USSR) NI P29-31
1965.

DESCRIPTORS: (*PUNCHED CARDS, *DATA PROCESSING
SYSTEMS), COMPUTERS, DIODES(SEMICONDUCTOR),
FERRITES, PROGRAMMING(COMPUTERS), INPUT-
OUTPUT DEVICES, PRINTING, TYPEWRITERS, CONTROL
SYSTEMS, RUSSIAN LANGUAGE, SYMBOLS, NUMBERS,
USSR (U)
IDENTIFIERS: ALPHA-NUMERIC SYMBOLS (U)

THE USP-1 MACHINE FOR READING ALPHANUMERIC
INFORMATION FROM PUNCHED CARDS AND PRINTING DECODED
INFORMATION ON PRINTER ROLLS IS DESCRIBED. CODE
FORMS, COMPATIBLE WITH THOSE USED FOR THE URAL-4
COMPUTER ARE SHOWN IN A TABLE. ABOUT 200 STANDARD
FERRITE-DIODE MODULES ARE USED IN THE READER-PRINTER
CONTROL SYSTEM CONSTRUCTION. THE FOLLOWING
FUNCTIONS ARE PERFORMED BY THE DEVICE: (1)
AUTOMATIC FEEDING AND RELAY OF PUNCHED CARDS, (2)
PRINTING OF ALPHANUMERIC TEXT, (3) RESETTING OF
INFORMATION REGISTERS AND TYPEWRITER CARRIAGE RETURN,
AS DESIGNATED BY THE PROPER CONTROL CODES ON PUNCHED
CARDS. OTHERWISE, CARRIAGE RETURN IS CAUSED BY
PRINTING IN THE RIGHT-MOST FIELD OF THE TYPEWRITER
PAPER ROLL. RELIABILITY CONTROLS ARE INSTALLED TO
STOP PRINTING AND READING IN CASE OF CERTAIN
MALFUNCTIONS. THE DEVICE IS CAPABLE OF HANDLING
BOTH RUSSIAN AND LATIN TEXT CHARACTERS, PLUS
SELECTED GREEK LETTERS, ARABIC AND ROMAN
NUMERALS, PUNCTUATION MARKS, ARITHMETIC AND OTHER
SYMBOLS, FOR A TOTAL OF 86 CHARACTERS IN ALL. THE
SAME CHARACTER DICTIONARY IS USED IN BOTH INPUT AND
OUTPUT MODES. PRINTER SPEED IS 10 CHARACTERS PER
SECOND. THE TYPEWRITER PAPER ROLL IS 170
CHARACTERS WIDE, AND THE TOTAL LENGTH OF THE ROLL IS
80 METERS. A BLOCK DIAGRAM OF THE FUNCTIONAL UNITS
OF THE DEVICE IS GIVEN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00296

AD-664 224 9/2
ILLINOIS UNIV URBANA DEPT OF COMPUTER SCIENCE
QUARTERLY TECHNICAL PROGRESS REPORT, JANUARY,
FEBRUARY, MARCH, 1967. (U)
67 296P
REPT. NO. COO-1469-0071

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-691 991.

DESCRIPTORS: (*COMPUTERS, SCIENTIFIC RESEARCH), ELECTROOPTICS, PHOTOCONDUCTIVITY, CODING, ELECTROLUMINESCENCE, ANALOG SYSTEMS, INTEGRAL TRANSFORMS, TIME SHARING, INPUT-OUTPUT DEVICES, SUBROUTINES, REMOTE CONTROL SYSTEMS, NUMERICAL ANALYSIS, PROGRAMMING(COMPUTERS), LINEAR PROGRAMMING, PROGRAMMING LANGUAGES, COMPUTER LOGIC, FAILURE(ELECTRONICS), MAINTENANCE (U)
IDENTIFIERS: LIGHT PENS, ILLIAC COMPUTER (U)

CONTENTS: CIRCUIT RESEARCH PROGRAM; HARDWARE SYSTEMS RESEARCH; SOFTWARE SYSTEMS RESEARCH PROGRAM; ILLIAC IV; NUMERICAL METHODS, COMPUTER ARITHMETIC AND ARTIFICIAL LANGUAGES; COMPUTATIONAL PHYSICS; SWITCHING THEORY AND LOGICAL DESIGN; ILLIAC II SERVICE, USE, AND PROGRAM DEVELOPMENT; IBM 7094/1401 SERVICE, USE, AND PROGRAM DEVELOPMENT; PROBLEM SPECIFICATIONS; GENERAL LABORATORY INFORMATION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-664 225 9/2
ILLINOIS UNIV URBANA DEPT OF COMPUTER SCIENCE
QUARTERLY TECHNICAL PROGRESS REPORT, APRIL, MAY, JUNE, 1967. (U)
67 296P
REPT. NO. COO-1469-0072

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-664 224.

DESCRIPTORS: (*COMPUTERS, SCIENTIFIC RESEARCH), PHOTOCONDUCTIVITY, EXCITATION, LIGHT PULSES, CODING, GRAPHICS, PROGRAMMING LANGUAGES, TIME SHARING, DIGITAL COMPUTERS, INPUT-OUTPUT DEVICES, SUBROUTINES, SYNTAX, DATA STORAGE SYSTEMS, NUMERICAL ANALYSIS, SYMBOLS, COMPUTER LOGIC, PROGRAMMING(COMPUTERS), MAINTENANCE (U)
IDENTIFIERS: ILLIAC COMPUTER (U)

CONTENTS: CIRCUIT RESEARCH PROGRAM; HARDWARE SYSTEMS RESEARCH; SOFTWARE SYSTEMS RESEARCH PROGRAM; ILLIAC IV; NUMERICAL METHODS, COMPUTER ARITHMETIC AND ARTIFICIAL LANGUAGES; COMPUTATIONAL PHYSICS; SWITCHING THEORY AND LOGICAL DESIGN; ILLIAC II SERVICE, USE, AND PROGRAM DEVELOPMENT; IBM 7094/1401 SERVICE, USE, AND PROGRAM DEVELOPMENT; PROBLEM SPECIFICATIONS; GENERAL LABORATORY INFORMATION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-666 152 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
A PUNCHED CARD READER. (U)
(CT 67 10P BUBEL,V. M. ;
KOSOBUTSKII,S. K. ;
REPT. NO. FTD-MT-24-287-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO. USTROISTVO VVODA S PERFOKART, MINSK, 1965 P159-63.

DESCRIPTORS: (*PUNCHED CARDS, *READING MACHINES), DIGITAL COMPUTERS, INPUT-OUTPUT DEVICES, RELIABILITY(ELECTRONICS), TESTS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

THIS PAPER DEALS WITH A NEW TYPE OF ON-LINE PUNCHED CARD READER DESIGNED TO FEED DATA INTO THE PUNCHED TAPE INPUT TERMINAL OF THE MINSK-1 COMPUTER. THE CARD READER EXTENDS THE CAPABILITY OF THIS COMPUTER BY PROVIDING AN ADDITIONAL MEANS OF INPUT. STANDARD 45-COLUMN CARDS ARE USED AT A SPEED OF 100 CARDS PER MINUTE. THE INFORMATION IS READ IN A SERIES-PARALLEL MODE. AN INTERNAL DECODER CONVERTS THE DECIMAL DATA INTO 8-4-2-1 BCD CODE, COMPATIBLE WITH THE PARTICULAR INPUT TERMINAL OF THE COMPUTER. THE COMPUTER GENERATES APPROPRIATE CONTROL SIGNALS UTILIZED IN THE CONTROL MODULE OF THE READER. A SIGNAL IS FED INTO THE COMPUTER WHENEVER A WORD BEGINS OR ENDS. FOR THE SERIAL OUTPUT OF THE DIGITS, A SHIFT REGISTER IS USED CONSISTING OF TRANSISTOR-FERRITE CORE ELEMENTS. A LABORATORY MODEL WAS BUILT AND TESTED WITH SATISFACTORY RESULTS. THE UNIT IS SMALL, SIMPLE, AND RELIABLE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-667 750 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
REGISTER ON UNITRONS. (U)
SEP 67 10P KARMAZINSKII,A. N. ;
KHEIFETS,A. SH. ;MALIN,B. V. ;SONIN,M. S.
;
REPT. NO. FTD-HT-23-706-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
POLUPROVODNIKOVYE PRIBORY I IKH PRIMENENIE:
SBORNIK STATEI (USSR) N14 P196-210 1965.

DESCRIPTORS: (*SHIFT REGISTERS, USSR), FIELD
EFFECT TRANSISTORS, CIRCUITS, RELAXATION
OSCILLATORS, DIGITAL COMPUTERS, TRIODES,
SEMICONDUCTORS, DATA STORAGE SYSTEMS (U)
IDENTIFIERS: TRANSLATIONS (U)

A SHIFT REGISTER BASED ON FLIP-FLOPS CONSISTING OF
D-C-COUPLED FIELD-EFFECT TRANSISTORS IS DESCRIBED.
TWO VARIANTS, DIFFERING ONLY IN THE RESET CIRCUITS
FOR EACH FLIP-FLOP, WERE TESTED. THE TWO RESET
VARIANTS ARE SHOWN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-668 963 9/2 9/5
WASHINGTON UNIV ST LOUIS MO COMPUTER SYSTEMS LAB
A MACROMODULAR APPROACH TO COMPUTER DESIGN: A
PRELIMINARY REPORT. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
FEB 66 69P CLARK,WESLEY A. ;
STUCKI,MISHELL J. ;ORNSTEIN,SEVERO M. ;
REPT. NO. TR-1
CONTRACT: SD-202, ARPA ORDER-655

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIGITAL COMPUTERS, SYSTEMS
ENGINEERING), (*MODULES(ELECTRONICS),
DIGITAL SYSTEMS), DESIGN, LOGIC CIRCUITS,
INPUT-OUTPUT DEVICES, CONTROL SEQUENCES,
SUBROUTINES, DECISION MAKING,
GATES(CIRCUITS), FLOW CHARTING, DATA
PROCESSING SYSTEMS, NETWORKS, ADAPTIVE SYSTEMS,
ELECTRIC CONNECTORS, ASSEMBLING, MODIFICATION
KITS, OPTIMIZATION, STANDARDIZATION, GROWTH,
INTEGRATED CIRCUITS (U)
IDENTIFIERS: *MACROMODULES, DATA
AVAILABILITY(COMPUTERS) (U)

THIS IS A PRELIMINARY REPORT OF MACROMODULAR
SYSTEMS. THE MACROMODULES DESCRIBED ARE
RELATIVELY SMALL, DIMENSIONALLY MODULAR, STRUCTURALLY
SELF-SUFFICIENT BOXES WHICH CONTAIN ALL OF THE
REQUIRED ELECTRONIC CIRCUITS AND MEMORY ELEMENTS.
ELECTRICAL CONNECTORS ON THE FACES OF EACH UNIT
PROVIDE ALL POWER AND SIGNAL ACCESS. THE UNITS CAN
BE INTERCONNECTED MECHANICALLY AND ELECTRICALLY TO
FORM LARGER ASSEMBLAGES, AND STANDARDIZED CABLES ARE
PROVIDED FOR ALL INTER-ASSEMBLAGE COMMUNICATION.
ALL CONNECTORS ARE BACKED BY SIGNAL-STANDARDIZING
AMPLIFIERS CAPABLE OF DRIVING ANY ATTACHABLE MODULE
OR CABLE. DATA PROCESSING MODULES ARE ORGANIZED IN
PARALLEL BINARY FORM WITH WORD-LENGTH MODULUS OF 12
BITS, AND ARE DESIGNED FUNCTIONALLY FOR ASYNCHRONOUS
OPERATION. MEMORY MODULES HOLD 4096 12 BIT WORDS.
(THE NUMBERS 12, 4096, AND OTHER SUCH PARAMETERS
HAVE BEEN MADE SPECIFIC, FOR PURPOSES OF THIS REPORT,
ONLY TO SIMPLIFY DESCRIPTION.) THE DESIGN OF A
SYSTEM BASED ON THESE MODULES REQUIRES ONLY THE
EXERCISE OF LOGIC. THE OPERABILITY OF THE
RESULTING SYSTEM CANNOT BE ADVERSELY AFFECTED BY THE
PHYSICAL DISTRIBUTION OR ARRANGEMENT OF PARTS, THE
DISTANCE BETWEEN UNITS, THE NUMBER OR DIVERSITY OF
MODULES, OR THE ROUTING OF THE INTERCONNECTING
PATHWAYS. MACROMODULAR SYSTEMS ARE, AS A RESULT, (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-668 964 9/2 9/9
WASHINGTON UNIV ST LOUIS MO COMPUTER SYSTEMS LAB
THE DESIGN OF A TAPE MACROMODULE. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 67 96P LITTLEFIELD,WARREN M. I
REPT. NO. TR-3
CONTRACT: SD-302, ARPA ORDER-699

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIGITAL COMPUTERS, SYSTEMS ENGINEERING), (*MODULES(ELECTRONICS), *MAGNETIC TAPE), DATA STORAGE SYSTEMS, LOGIC CIRCUITS, INTERFACES, TIMING CIRCUITS, CODING, RELAXATION OSCILLATORS, PHASE, TEST METHODS, INTEGRATED CIRCUITS, COMPUTER PROGRAMS, COMMAND + CONTROL SYSTEMS, WIRING DIAGRAMS, INPUT-OUTPUT DEVICES, SUBROUTINES, COSTS (U)
IDENTIFIERS: *MACROMODULES, DEBUGGING(ENGINEERING), LINC COMPUTER (U)

THIS REPORT DEALS WITH THE DESIGN AND FUNCTION OF A MAGNETIC TAPE SYSTEM MODULE. THE PROTOTYPE WAS BUILT OUT OF MECL INTEGRATED LOGIC AND USED IN THE PULSE MANNER, AND HANDLES ALL THOSE FUNCTIONS PECULIAR TO THE BASIC LINC TAPE TRANSPORT. THE SYSTEM WAS INTERFACED AND DEBUGGED ON A LINC COMPUTER WHICH WAS PROGRAMMED TO BEHAVE AS A MACROMODULAR INTERFACE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800796

AD-669 277 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
USE OF SOEMTRON CALCULATOR-PUNCHED CARD MACHINES FOR THE MECHANIZATION OF CONTROL OPERATIONS (ISPOLZOVANIE SCHETNO-PERFORATSIONNYKH MASHIN 'ZOEMTRON DLYA MEKHANIZATSII UPRAVLENCHESKOGO TRUDA). (U)
JUL 67 14P KORPUS,M. I
REPT. NO. FTD-HT-23-916-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF MONO. SREDSTVA I METODY MEKHANIZATSII PODGOTOVKI I POISKA NAUCHNO-TEKHNICHESKOI INFORMATSII, INZHENERNOGO I UPRAVLENCHESKOGO, MOSCOW, 1965 P207-13 1965, BY F. DION.

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, PUNCHED CARDS), (*PUNCHED CARDS, AUTOMATION), PRODUCTION CONTROL, INPUT-OUTPUT DEVICES, AUTOMATA, CONTROL SYSTEMS, PERFORMANCE(ENGINEERING), USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

THE ARTICLE DISCUSSES THE PUNCHED CARD MACHINES PRODUCED BY THE PEOPLE'S TYPEWRITER PLANT IN SEMMERDA, WHICH ARE USED IN CONTROL WORK: SOEMTRON 413 MAGNETIC PUNCH, SOEMTRON 423 MAGNETIC VERIFIER, SOEMTRON 432 PUNCHED CARD SORTER, SOEMTRON 440 SUMMARY PUNCH, SOEMTRON 402 TABULATOR, AND THE ASM 18 COMPUTER. SORTER S-432 CAN SORT 42,000 PUNCHED-CARDS AN HOUR IN ANY DESIRED NUMERICAL ORDER BY MEANS OF A BRUSH BLOCK. TABULATOR 402 (GOLD MEDAL WINNER AT THE 1964 SPRING FAIR IN LEIPZIG) PROCESSES DATA ON 80-COLUMN PUNCHED-CARDS AND IS USED IN PLANNING, STATISTICS, COMPUTATION, AND SCIENTIFIC RESEARCH; IT CAN HANDLE 9000 PUNCHED-CARDS AN HOUR. THE SUMMARY PUNCH CAN HANDLE 6000 PUNCHED-CARDS AN HOUR. THE ASM 18 COMPUTER CAN BE CONNECTED TO THE TABULATOR 402. THE ARTICLE DESCRIBES THE AUTOMATIC OPERATION OF AN AGGREGATE OF THESE MACHINES, IN WHICH THE TABULATOR PLAYS THE KEY ROLE IN THE FINAL PROCESSING OF THE RESULTS OF THE ARITHMETIC AND LOGICAL OPERATIONS OF THE OTHER MACHINES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-669 300 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
MEMORY DEVICE WITH EXTERNAL SELECTION
(ZAPOMINAYUSHCHEE USTROISTVO S VNESHNIM VYBOROM), (U)
SEP 67 11P SOROKIN,V. N. ;
VASHKEVICH,N. P. ;
REPT. NO. FTD-MT-24-130-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MOSKOVSKOE VYSSHEE TEKHNICHESKOE UCHILISHCHE. VYCHISTITELNAYA TEKHNIKA (USSR) N9 P91-7 1966.

DESCRIPTORS: (*MAGNETIC CORE STORAGE, DESIGN), FERRITES, ELECTRICAL PROPERTIES, PERFORMANCE(ENGINEERING), DIGITAL COMPUTERS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

A HIGHLY RELIABLE TRANSISTORIZED TWO-CORES-PER-BIT FILE MEMORY DESIGNED TO OPERATE IN DATA PROCESSING CONTROL SYSTEMS IS DESCRIBED. IT CONSISTS OF: A FERRITE-CORE STACK SERVING AS THE ACCUMULATOR STORE; TWO ADDRESS REGISTERS; A SAMPLING CIRCUIT; A CIRCUIT FOR GENERATING SAMPLING-CURRENT PULSES; WRITE DRIVERS SERVING TO SHAPE POWERFUL CURRENT PULSES DURING DATA RECORDING; AN OUTPUT SIGNAL AMPLIFIER; INPUT AND OUTPUT REGISTERS; AN OVERWRITING CIRCUIT; AND THE OPERATING-CYCLE CONTROL CIRCUIT. THERE ARE TWO CORES PER BIT: A MEMORY CORE AND A SWITCH CORE. THE MAXIMUM SWITCH TIME OF ANY CORE DOES NOT EXCEED 4 MSEC. THE MEMORY DEVICE IS POWERED FROM A 24 V SOURCE. THE POWER REQUIREMENT OF THE ENTIRE DEVICE IS ABOUT 100 W. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-669 379 9/2
ARMED FORCES RADIOBIOLOGY RESEARCH INST BETHESDA MD
A TECHNIQUE FOR CONVERTING A KEY PUNCH INTO A
COMPUTER PUNCHED CARD READER. (U)
DEC 67 29P BROCATO,L. J. ;GITELMAN,J.
J. ;ROCKWELL,R. W. ;
REPT. NO. AFRRI-TN67-4

UNCLASSIFIED REPORT

DESCRIPTORS: (*PUNCHED CARDS, DIGITAL
COMPUTERS), INPUT-OUTPUT DEVICES,
SYNCHRONIZATION(ELECTRONICS), COMPUTER
PROGRAMS, INTERFACES, COSTS (U)
IDENTIFIERS: KEY PUNCH MACHINE (U)

THE REPORT DESCRIBES A TECHNIQUE FOR CONVERTING A
KEY PUNCH INTO A PUNCHED CARD READER FOR USE WITH A
SMALL-SCALE SPECIAL PURPOSE COMPUTER SYSTEM. THE
DISCUSSION INCLUDES A SYSTEM DESCRIPTION, HARDWARE
MODIFICATIONS, SOFTWARE ANALYSIS AND A DESCRIPTIVE
SOFTWARE LISTING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-669 419 9/2 4/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
AN IMMEDIATE-ACCESS BUFFER (MEMORY UNIT) FOR AN
ELECTRONIC COMPUTER (BUFERNOE OPERATIVNOE
ZAPOMINAYUSHCHEE USTROISTVO DLYA ELEKTRONNOI
VYCHISLITELNOI MASHINY). (U)
JUL 67 20P FEDOROV,V. A. I
REPT. NO. FTD-MT-24-128-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MIROVOI
METEOROLOGICHES-II TSENTR, LENINGRAD. TRUDY (USSR)
NIO P193-11 1965.

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, *COMPUTER
STORAGE DEVICES), (*WEATHER FORECASTING, DATA
PROCESSING SYSTEMS), DATA TRANSMISSION SYSTEMS,
CONTROL, MAGNETIC RECORDING SYSTEMS, MAGNETIC
TAPE, PUNCHED CARDS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

A BUFFER OPERATIONAL STORAGE DEVICE (BOZU) BASED
ON MAGNETIC OPERATIONAL STORAGE DEVICES AND BUFFER
COORDINATING UNITS IS USED TO OPERATE THE COMPUTER
COMPLEX FOR WEATHER FORECASTING AT THE SSSR WORLD
METEOROLOGICAL CENTER. THE BOZU PROVIDES
SIMULTANEOUS STORAGE OF INFORMATION FROM DIFFERENT
DEVICES WITH THE PROPER ORDERING AND PREPROCESSING OF
THIS INFORMATION. IT ALSO CONTROLS THE OPERATION
OF ALL DEVICES CONNECTED WITH THE COMPUTER. IN ONE
ARRAY OF THE COMPLEX THE UNIT AUTOMATICALLY RECEIVES
DATA FROM COMMUNICATIONS CHANNELS AND RECORDS IT ON
ONE OF SEVERAL BUFFER TAPES TO ABBREVIATE THE
COMPUTER INPUT PROCESS. THE SYSTEM CAN ALSO
PREDIGEST PUNCHED CARDS TO EXPEDITE THEIR INPUT.
THE BOZU ALSO ACCEPTS THE COMPUTER OUTPUT AND
EXPEDITES THE DISPATCH OF THIS INFORMATION TO SUCH
ASSOCIATED EQUIPMENT AS AUTOMATIC CHART PLOTTERS AND
WEATHER FORECAST TRANSMISSION CHANNELS. THE
COMPUTER TIME UTILIZATION IS SO EFFICIENTLY
COORDINATED THAT IN ONE OF THE MOST COMPLEX
OPERATIONAL MODES THE RECEIVING AND TRANSMITTING OF
INFORMATION FROM THE COMPUTER REQUIRES ONLY 30% OF
THE COMPUTER TIME, LEAVING THE REMAINING 70% FOR
COMPUTER ANALYSIS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-800 897 9/2
CARNEGIE INST OF TECH PITTSBURGH PA
MTHAT ASSEMBLER FOR THE CDC G-21. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
64 82P ROSS,DANIEL :
CONTRACT: SD-146
MONITOR: AFOSR 67-0296

UNCLASSIFIED REPORT

DESCRIPTORS: (*INPUT-OUTPUT DEVICES, DIGITAL COMPUTERS), PUNCHED CARDS, INSTRUCTION MANUALS, DATA PROCESSING SYSTEMS, PROGRAMMING LANGUAGES, COMPUTER STORAGE DEVICES, COMPUTER LOGIC, CODING, OPERATION (U)
IDENTIFIERS: MTHAT, ASSEMBLER(COMPUTERS), G-21 COMPUTERS (U)

MTHAT IS A ONE-PASS SYMBOLIC ASSEMBLER FOR THE CDC (FORMERLY BENDIX) G-21 COMPUTER. IT IS DESIGNED TO BE USED IN CONJUNCTION WITH THE CARNEGIE TECH G-21 MONITOR SYSTEM. THE INPUT TO MTHAT IS A SET OF PUNCHED CARDS, OR THE IMAGES OF PUNCHED CARDS OBTAINED FROM EITHER THE G-21 CONTROL CONSOLE OR THE REMOTE TELETYPE UNITS. THE OUTPUTS ARE G-21 MACHINE CODE IN THE COMPUTER MEMORY, USUALLY ONE WORD OF CODE FOR EACH CARD INPUT, AND A PRINTED ASSEMBLY LISTING. THERE ALSO ARE PROVISIONS FOR COMMUNICATION BETWEEN MTHAT AND AN OPERATOR OR PROGRAMMER AT THE G-21 CONTROL CONSOLE. MTHAT IS CALLED A ONE-PASS ASSEMBLER BECAUSE USUALLY EACH INPUT CARD IS PROCESSED ONCE ONLY. (AUTHOR) (U)

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* * *

THE RAMO-WOOLDRIDGE CORPORATION GENERAL RESEARCH PROGRAM, 1957. SECTION E. MAGNETIC DIGITAL TECHNIQUES.
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* * *
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* * *

[illegible] MEMORY SHEET MEMORY
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[illegible], I. J.

* * *

[illegible] FOR CONVERTING A KEY
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[illegible]

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* * *

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*BROWN, [illegible] E.

* * *

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* * *

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* * *

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* * *

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[illegible] SHARING. PART ONE. THE
[illegible]MENTALS OF TIME SHARING. PART
[illegible] AN EVALUATION OF COMMERCIAL
[illegible] SHARING COMPUTERS. PART THREE.
[illegible]ATIONAL MANAGEMENT OF TIME
[illegible]ING SYSTEMS.
[illegible] 730

[illegible], [illegible]MAS B.

[illegible] GRAPHIC DISPLAY FOR A
[illegible] TIME-SHARING CONSOLE.
[illegible] 673

[illegible], [illegible] A.

[illegible] MOS RANDOM ACCESS MEMORY.
PHASE II 1024 BIT MEMORY.
[illegible]

[illegible], LEWIS C.

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THE MANIPULATION OF SYMBOLIC
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AD-671 313

*CLARK, NEILEY A.

A MACROMODULAR APPROACH TO COMPUTER
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[illegible]

*COFFMAN, [illegible]

PRELIMINARY ANALYSIS OF TIME-SHARED
COMPUTER OPERATION.
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*CONNELL, H. A.

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*CORBATO, F. J.

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*COSENTINO, L. S.

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*COX, JEROME R., JR

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*DAVIDSON, W.H

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[illegible]

[illegible]

[illegible]

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GENERAL REFERENCE.
AD-614 909

[illegible]

COBLENTZ, S. P.

* * *

DESIGN CONSIDERATIONS FOR CANCOS, A COMPUTER-ASSISTED MAINTENANCE PLANNING AND CONTROL SYSTEM.
AD-655 728

[illegible]

COUNN, ROBERT M.

* * *

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[illegible]

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* * *

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[illegible]

COURNAN, LARRY

* * *

REFERENCE MANUAL TIME-SHARING SYSTEM.
AD-547 [illegible]

[illegible]

DEINHORN, S.N

* * *

MAGNETIC PARAMETRON LOGIC ELEMENTS
AD-782 818

[illegible]

DELKING, J. I.

* * *

HUMAN FACTORS AND THE DESIGN OF TIME SHARING COMPUTER SYSTEMS.
AD-686 593

[illegible]

DELROD, H. G.

* * *

THREE-DIMENSIONAL ELASTICITY THEORY FOR FLAT-PLATE MEMORY ELEMENTS SUBJECTED TO SPACE-VARIABLE NORMAL TRACTION.
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[illegible]

DERIKSON, WARREN J.

* * *

AN ANALYTICAL COST COMPARISON OF COMPUTER OPERATING SYSTEMS.
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[illegible]

TIME-SHARING OPERATING SYSTEMS AND MANAGEMENT.
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* * *
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*FRIEDS, RICHARD E.
* * *
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*FINE, GERALD H.
* * *
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* * *
FILTER DESIGN FOR THE AVERAGE RESPONSE COMPUTER.
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* * *
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* * *
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* * *
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*FRICK, F. C.
* * *
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* * *
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* * *
GENERAL RESEARCH.
AD-630 918
* * *
GENERAL RESEARCH.
AD-634 819

FRIEDMAN, B. B.

* * *

THE TRW TWO-STATION, ON-LINE SCIENTIFIC COMPUTER.
AD-609 730

*FRIED, BURTON D.

* * *

AN ON-LINE COMPUTING CENTER.
AD-[illegible]

*FRIEDERICH, PAUL E.

* * *

A TECHNIQUE FOR UTILIZING THE IBM OR THE RCA RANDOM-ACCESS MASS-MEMORY DEVICES TO STORE THE DATA BASE OF A COMMAND AND CONTROL INFORMATION PROCESSING SYSTEM.
AD-[illegible]

*GALLEPSON, LOUIS

* * *

TIME-SHARING SYSTEMS: REAL AND IDEAL.
AD-[illegible]

*GEVORKYAN, R. G.

* * *

COMPUTER TECHNOLOGY, 1963, NO. 2 (SELECTED ARTICLES).
AD-616 269

*GITELMAN, J. J.

* * *

A TECHNIQUE FOR CONVERTING A KEY PUNCH INTO A COMPUTER PUNCHED CARD READER.
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*GOLD, M. M.

* * *

AN EVALUATION OF COMMERCIAL TIME SHARING SYSTEMS.
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* * *

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*GOLD, MICHAEL M.

* * *

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* * *

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* * *

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*GUNDERSON, D. C.

* * *

ASSOCIATIVE TECHNIQUES FOR CONTROL FUNCTIONS IN A MULTI-PROCESSOR

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* * *
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*HANCOCK, H. LEE, JR
* * *
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* * *
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* * *
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*HERLIN, MELVIN A.
* * *
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* * *
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*HOLLAND, F. C.
* * *
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* * *
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* * *
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*JACKSON, A. S.
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[illegible]

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* * *

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[illegible]

[illegible]

* * *

[illegible] REFERENCE MANUAL FOR G-[illegible].

[illegible]

* * *

[illegible] FILE AND LIBRARY [illegible] LISP 1.5 MOD.

[illegible]

[illegible]

* * *

[illegible] A SYSTEM FOR ON-LINE [illegible] ANALYSIS. DESCRIPTION [illegible] AND INSTRUCTION [illegible]

[illegible]

*[illegible], [illegible] YA.

* * *

[illegible] DEVICES IN COMPUTER [illegible].

[illegible]

*[illegible], [illegible] M.

* * *

[illegible] AN UNITRONS.

[illegible]

[illegible], [illegible] G.

* * *

[illegible] AND [illegible] OF ELECTRIC [illegible].

[illegible]

*[illegible], JACOB

* * *

A PROGRAM FOR ON-LINE ANALYSIS OF [illegible] ELECTRONIC CIRCUITS.

[illegible]

*[illegible], CHARLES H.

* * *

AN APPROACH TO THE ON-LINE INTERROGATION OF STRUCTURED FILES OF FACTS USING NATURAL LANGUAGE.

[illegible]

*[illegible], DANIEL H.

* * *

[illegible] 4-CODE OUTPUT TERMINAL FOR TIME-SHARED COMPUTERS.

AD-662 027

*KENNEDY, PHYLLIS R.

* * *

THE TINY USERS' GUIDE.

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* * *

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* * *

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* * *

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* * *

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* * *

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* * *

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* * *

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* * *

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* * *

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*LASHEVSKII, R. A.

* * *

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AD-649 414

*LASSILA, A.

* * *

REINFORCED PLASTIC MAGNETIC TAPE.
AD-611 143

*LAUER, HUGH C.

* * *

STEPS TOWARD A GENERAL PURPOSE TIME-SHARING SYSTEM USING LARGE CAPACITY CORE STORAGE AND TSS/360.
AD-668 078

*LEDLEY, ROBERT S

* * *

COLLECTED PAPERS ON SWITCHING CIRCUIT THEORY AND LOGICAL AND SYSTEMS DESIGN

[illegible]

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[illegible] ANALYSIS OF [illegible] CIRCUITS.
[illegible]

[illegible]

* * *

[illegible] OPTICAL MEMORY DRUM
AD[illegible]

[illegible]

* * *

[illegible] COMPENSATOR FOR SAMPLED-[illegible] SYSTEMS USING MAGNETIC CORES [illegible] STORAGE ELEMENTS
[illegible]

[illegible], WENDELL S.

* * *

[illegible]-ELECTRONIC DATA INPUT-OUTPUT [illegible]
[illegible]

[illegible] ENGENSER, W. R.

* * *

A FACILITY FOR EXPERIMENTATION IN MAN-MACHINE INTERACTION.
AD-687 533

* * *

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AD-661 639

[illegible], RICHARD R.

* * *

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AD-686 750

[illegible]TYLEFIELD, WARREN M.

* * *

THE DESIGN OF A TAPE MACROMODULE.
AD-668 964

[illegible], THOMAS C.

* * *

DESIGN PRINCIPLES FOR AN ON-LINE INFORMATION RETRIEVAL SYSTEM.
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[illegible]SHIKAYA, I. L.

* * *

SEMICONDUCTOR DEVICES IN COMPUTER ENGINEERING.
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*LYNCH, JEREMIAH

* * *

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*LYUBCHANSKII, M. S.

* * *

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AD-699 341

*MAISNER, L.

* * *

AUTOMATIC UNIT-RECORD STORAGE AND RETRIEVAL DEVICE 85-6A.
AD-835 965

*MAKHMUDOV, YU. A.

* * *

PUNCHED-TAPE DATA INPUT UNIT WITH CIRCUITAL CONVERSION OF NUMBERS.
AD-650 730

* * *

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*MAKSIMOV, M. N.

* * *

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*MALIN, B. V.

* * *

REGISTER ON UNITRONS.
AD-687 750

*MANUS, S.

* * *

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*MARINO, MICHAEL J.

* * *

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*MARKS, S. L.

* * *

THE JOSS PRIMER.
AD-659 734

*MARTYNOV, YE.M

* * *

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*MATHIAS, JOSEPH E
* * *
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AD-255 310

*MCGOURNIE, D.
* * *
REINFORCED PLASTIC MAGNETIC TAPE.
AD-611 143

*MCCABE, JOHN P.
* * *
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*MCISAAC, PAUL V.
* * *
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* * *
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* * *
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*MEEKER, ROBERT J.
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* * *
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*MILCH, A.
* * *
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*MILLER, S.W
* * *
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* * *
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* * *
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* * *
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*MOORE, WILLIAM H., JR
* * *
TRACE MODEL 1. TIMESHARED ROUTINES FOR ANALYSIS, CLASSIFICATION AND EVALUATION.
AD-622 020

*MORENOFF, EDWARD
* * *
THEORY OF A MULTIPLE TAPE QUEUING SYSTEM AND ITS APPLICATION TO ELECTRONIC SYSTEMS
AD-276 359

*MORTON, RICHARD P.
* * *
THE INPUT/OUTPUT AND CONTROL SYSTEM OF THE MOORE SCHOOL PROBLEM SOLVING FACILITY.
AD-653 961

[illegible] COMPUTER.

[illegible] FOR THE

[illegible] PRESSER FOT-3A,

[illegible] AND CONTROL UNIT

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[illegible] RESEARCH.
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[illegible] SCALING DEMONSTRATION OF REAL-TIME
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[illegible] APPLICATION OF LARGE-SCALE
[illegible] TO U.S. AIR FORCE
[illegible] SYSTEMS.

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[illegible] COMPUTER-BASED RUNWAY FOR REAL
[illegible] OPERATION.
[illegible] 576

[illegible]

[illegible] AND THE DESIGN OF

TIME SHARING COMPUTER SYSTEMS.
AD-666 583

*EISENSON, JOYCE

* * *

COMPUTER SCIENCE TESTING DEVICE.
AD-643 [illegible]

*NOLAN, J. F.

* * *

AN EXPERIMENTAL ON-LINE DATA
STORAGE AND RETRIEVAL SYSTEM.
AD-615 658

*NOLAN, JOHN F.

* * *

AN EXPERIMENTAL ON-LINE DATA
STORAGE AND RETRIEVAL SYSTEM.
AD-623 79[illegible]

*NORTHROP, G. M.

* * *

USE OF MULTIPLE ON-LINE, TIME-
SHARED COMPUTER CONSOLES IN
SIMULATION AND GAMING.
AD-654 478

*NUGENT, WILLIAM R.

* * *

TEXT REPORTING AND EDITING DEVICE:
COMPARATIVE OPERATIONAL
PERFORMANCE.
AD-619 961

*NYBERG, K. J.

* * *

THE RAND-WOOLDRIDGE CORPORATION
GENERAL RESEARCH PROGRAM, 1957:
SECTION E, MAGNETIC DIGITAL
TECHNIQUES.
AD-607 506

*OLIVERI, P.

* * *

NONDESTRUCTIVE READOUT (NDRO) FROM
THIN MAGNETIC FILMS.
AD-647 247

*ORNSTEIN, SEVERO M.

* * *

A MACROMODULAR APPROACH TO COMPUTER
DESIGN: A PRELIMINARY REPORT.
AD-668 963

*OTTOSON, H. I.

* * *

AIR TRAFFIC CONTROL STUDIES,
TERMINAL AREA SEQUENCING AND
CONTROL.

AD-612 898

•PAGE, LELAND F.
• • •
A DYNAMIC COMPUTER MODEL FOR SIMULATING MILITARY COMMAND SYSTEMS.
AD-612 939

•PARDEE, R. S.
• • •
AIR TRAFFIC CONTROL STUDIES. TERMINAL AREA SEQUENCING AND CONTROL.
AD-612 898

•PATEL, NITIN RATILAL
• • •
A MATHEMATICAL ANALYSIS OF COMPUTER TIMESHARING SYSTEMS.
AD-605 828

•PEOPLES, PATRICK J.
• • •
RESEARCH IN FERROMAGNETICS, PART II.
AD-658 046

•PETERSEN, H. E.
• • •
SYSTEM IMPLICATIONS OF INFORMATION PRIVACY.
AD-650 847

•PETERTYL, S.
• • •
MICROELECTRONIC CIRCUITRY IN MICRO-MODULES.
AD-418 715

•PETUNIN, V. K.
• • •
MATRIX COMPUTER FOR CALCULATING COR ELATION FUNCTIONS.
AD-662 838

•PIRTLE, M. R.
• • •
A FACILITY FOR EXPERIMENTATION IN MAN-MACHINE INTERACTION.
AD-667 633
• • •
A USER MACHINE IN A TIME-SHARING SYSTEM.
AD-667 659

•POLIKARPOV, P. N.
• • •
SHIFT REGISTER.

AD-[illegible] 916

•POOE, D.
• • •
THE TRW TWO-STATION, ON-LINE SCIENTIFIC COMPUTER.
AD-609 728

•POSTLEY, JOHN A.
• • •
CONTRASTS IN LARGE FILE [illegible] FOR LARGE SCALE COMPUTERS.
AD-606 604

•POWELL, W.S
• • •
MAGNETIC PARAMETRON LOGIC [illegible]
AD-263 818

•PRITCHARD, J. PAUL, JR
• • •
FABRICATION AND TESTING OF [illegible] CRYOGENIC ASSOCIATIVE [illegible] PLANES.
AD-618 494

•PRUETT, BILLIE R
• • •
UTILITY SYSTEM PROGRAMMING PROPOSALS, A TWO TAPE SYSTEM FOR COPII
AD-[illegible] 199

•PRYOR, C. N.
• • •
THE DISAC MAGNETIC TAPE SYSTEM AND PERIPHERAL EQUIPMENT CONTROLS.
AD-[illegible]29 788

•PULVARI, CHARLES F
• • •
FERRIELECTRICS AS A POSSIBLE COMPUTER ELEMENT
AD-269 542

•PULVARI, CHARLES F.
• • •
RESEARCH ON THE APPLICATION OF FERRO-AND FERRIELECTRIC PHENOMENA IN COMPUTER DEVICES.
AD-619 010

•PURI, V. K.
• •
MULTIPLEXING SPECIAL PURPOSE ACCESSORIES TO A DIGITAL COMPUTER.
AD-423 822

•PUTZ, AND R.

[illegible] IN KIRMA-

[illegible] MEMORY

[illegible] CONTROL

[illegible] ANALYSIS OF A
[illegible] CENTER.
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[illegible] COMPUTER CLASSIFICATION OF
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[illegible] AID.
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A TECHNIQUE FOR CONVERTING A KEY
[illegible] PUNCHED CARD
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[illegible]

[illegible] OF CTSS IN A TEACHING
[illegible]
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[illegible], RONALD E.

A LOW-COST OUTPUT TERMINAL FOR TIME-
[illegible] COMPUTERS.
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[illegible] BERGER, [illegible]

[illegible] ASSOCIATIVE PROCESSOR
[illegible] TEST AND EVALUATION.
[illegible]

[illegible], DANIEL

[illegible] ASSEMBLER FOR THE [illegible]
[illegible]

*BOZSNAYAT, M. A.

MAGNETIC INTEGRATION AND
DIFFERENTIATION OF ELECTRIC
SIGNALS.
AD-661 033

*BUX, PETER T.

EVALUATION OF THREE CONTENT-
ADDRESSABLE MEMORY SYSTEMS USING
GLASS DELAY LINES.
AD-660 792

*BACKMAN, [illegible]

EXPERIMENTAL INVESTIGATION OF USER
PERFORMANCE IN TIME-SHARED
COMPUTING SYSTEMS: RETROSPECT,
PROSPECT, AND THE PUBLIC INTEREST.
AD-634 624

TIME-SHARING VERSUS BATCH
PROCESSING: THE EXPERIMENTAL
EVIDENCE.
AD-661 455

*BAKMAROV, V. N.

TAPE-DRIVE ASSEMBLY FOR MAGNETIC
TAPES IN THE M-2 COMPUTER.
AD-603 077

*BALTZER, J. H.

CTSS TECHNICAL NOTES.
AD-618 702

*BALTZER, JEROME HOWARD

TRAFFIC CONTROL IN A MULTIPLEXED
COMPUTER SYSTEM.
AD-635 962

*SAMUEL, ARTHUR L.

TIME-SHARING ON A MULTICONSOLE
COMPUTER.
AD-462 158

*SANDERSON, K.

DIGITAL MAGNETIC TAPE UNITS FOR THE
MERCURY AND DEUCE COMPUTERS. PART
2. CONTROL CIRCUITS.
AD-[illegible] 766

*SANTESMASES, J. GARCIA

RESEARCH ON FERRORESONANT COMPUTER AND CONTROL DEVICES.
AD-658 189

* * *

RESEARCH ON FERRORESONANT COMPUTER AND CONTROL DEVICES.
AD-658 190

* * *

RESEARCH ON FERRORESONANT COMPUTER AND CONTROL DEVICES.
AD-658 217

*SCARBROUGH, A. D.

* * *

THE RAND-BOOLDRIDGE CORPORATION GENERAL RESEARCH PROGRAM, 1957. SECTION E, MAGNETIC DIGITAL TECHNIQUES.
AD-607 506

*SCHECTER, GEORGE

* * *

INFORMATION RETRIEVAL. A CRITICAL VIEW.
AD-646 556

*SCHERR, ALLAN L

* * *

AN ANALYSIS OF TIME-SHARED COMPUTER SYSTEMS.
AD-470 715

*SCHMIDT, W. G.

* * *

DESIGN ASPECTS OF MINIMAL-POWER DIGITAL CIRCUITRY.
AD-612 769

*SCHOENDORF, WILLIAM H.

* * *

TRANSISTORIZED SHIFT REGISTER.
AD-606 390

*SCHWARTZ, JULES I.

* * *

A REPORT ON A LARGE-SCALE TIME-SHARING SYSTEM.
AD-425 527

* * *

OBSERVATIONS ON TIME-SHARED SYSTEMS.
AD-622 013

* * *

THE SDC TIME-SHARING SYSTEM REVISITED.
AD-652 477

*SCHWERTZ, F. J.

* * *

FELLOWSHIP ON COMPUTER COMPONENTS NO. 347.
AD-663 403

*SELWYN, LEE L.

* * *

TOWARD ECONOMICAL REMOTE COMPUTER ACCESS.
AD-657 783

*SHARP, DONALD D., JR

* * *

THE USE OF REAL TIME COMPUTERS FOR INVENTORY CONTROL.
AD-608 342

*SHAW, J. C.

* * *

JOSS: A DESIGNER'S VIEW OF AN EXPERIMENTAL ON-LINE COMPUTING SYSTEM.
AD-603 972

* * *

JOSS: EXAMPLES OF THE USE OF AN EXPERIMENTAL ON-LINE COMPUTING SERVICE.
AD-614 992

* * *

JOSS: CONVERSATIONS WITH THE JOHNNIAC OPENSHOP SYSTEM.
AD-615 604

* * *

JOSS: EXPERIENCE WITH AN EXPERIMENTAL COMPUTING SERVICE FOR USERS AT REMOTE TYPEWRITER CONSOLES.
AD-615 993

*SHTURMAN, YA. P.

* * *

DEVICE FOR READING AND PRINTING ALPHABET DIGITAL INFORMATION FROM PERFORATION CARDS(NSP-1).
AD-663 716

*SHURE, GERALD H.

* * *

REAL-TIME COMPUTER STUDIES OF BARGAINING BEHAVIOR: THE EFFECTS OF THREAT UPON BARGAINING.
AD-420 516

* * *

TRACE MODEL I. TIMESHARED ROUTINES FOR ANALYSIS, CLASSIFICATION AND EVALUATION.
AD-622 020

*SIMMONS, R. F.

* * *

[illegible]

[illegible] INTERACTIVE DISPLAYS IN [illegible] TO LINGUISTIC ANALYSIS AND INFORMATION PROCESSING AND RETRIEVAL.
AD-[illegible] 647

*SMITH, ARTHUR AUBREY
* * *
INPUT/OUTPUT IN TIME-SHARED, [illegible] MULTIPROCESSOR SYSTEMS.
AD-[illegible]

*SMITH, DONALD LEIGH
* * *
MODELS AND DATA STRUCTURES FOR DIGITAL LOGIC SIMULATION.
AD-[illegible] 152

*SOUTH, W. S.
* * *
[illegible] ON WHITROUD.
AD-[illegible] 750

*[illegible]
* * *
THREE-DIMENSIONAL ELASTICITY THEORY FOR FLAT-PLATE MEMBER ELEMENTS SUBJECTED TO SPACE-VARIABLE NORMAL TRACTION.
AD-[illegible] 787

*SOROKIN, V. N.
* * *
MEMORY DEVICE WITH EXTERNAL ELECTRICAL [illegible] COMPONENTS [illegible] VOLTAGE [illegible].
AD-[illegible]

*SPAIN, ROBERT J.
* * *
RESEARCH IN FERROMAGNETICS, PART II.
AD-[illegible]

*SPENGLER, D.
* * *
AUTOMATIC UNIT-RECORD STORAGE AND RETRIEVAL DEVICE 85-6A.
AD-[illegible]

*STAFFORD, R.A
* * *
A MAGNETIC INTEGRATOR FOR THE PERCEPTRON PROGRAM
AD-[illegible]

*STARBS, F. G.
* * *
STORAGE DEVICE.
AD-[illegible]

*STEADRY, A. C.
* * *
TIME SHARING - PART ONE. THE FUNDAMENTALS OF TIME SHARING. PART TWO. AN EVALUATION OF COMMERCIAL TIME SHARING COMPUTERS. PART THREE. OPERATIONAL MANAGEMENT OF TIME SHARING SYSTEMS.
AD-[illegible] 730

*STEDRY, A. C.
* * *
AN EVALUATION OF COMMERCIAL TIME SHARING SYSTEMS.
AD-[illegible] 275

*STEINPACK, M. T.
* * *
FELLOWSHIP ON COMPUTER COMPONENTS NO. 347.
AD-[illegible] 503

*STOTZ, ROBERT H.
* * *
A LOW-COST GRAPHIC DISPLAY FOR A COMPUTER TIME-SHARING CONSOLE.
AD-[illegible] 873

*STROLLO, THEODORE R.
* * *
A GENERAL PURPOSE VIDEO INPUT DEVICE FOR A DIGITAL COMPUTER.
AD-[illegible] 692

*STRONG, STEPHEN
* * *
MAP. A SYSTEM FOR ON-LINE MATHEMATICAL ANALYSIS. DESCRIPTION OF THE LANGUAGE AND INSTRUCTION MANUAL.
AD-[illegible]

*STUCKI, MISHELL J.
* * *
A MACROMODULAR APPROACH TO COMPUTER DESIGN: A PRELIMINARY REPORT.
AD-[illegible] 763

*STUPOV, M. N.
* * *
BUFFER MEMORY DEVICE.
AD-[illegible] 342

*TABER, W.E
* * *
INFORMATION FOR COP USERS 300 CARD READ AND 523 CARD PUNCH CAPABILITY

AD-401 450

*TLITELMAN, WARREN
* * *
A GENERAL PURPOSE VIDEO INPUT DEVICE FOR A DIGITAL COMPUTER.
AD-633 4[illegible]2

*TENG, C.
* * *
COMBAT -- A SERIES OF ON-LINE COMPUTER PROGRAMS FOR FORCE COST ANALYSIS.
AD-6[illegible] 039

*TENZER, A. J.
* * *
COMBAT -- A SERIES OF ON-LINE COMPUTER PROGRAMS FOR FORCE COST ANALYSIS.
AD-6[illegible] 039

*THANE, P. D. M.
* * *
DIGITAL MAGNETIC TAPE UNITS FOR THE MERCURY AND DEUCE COMPUTERS. PART 2. CONTROL CIRCUITS.
AD-4[illegible] 766

*THIMMONS, J. A.
* * *
ASSOCIATIVE TECHNIQUES FOR CONTROL FUNCTIONS IN A MULTI-PROCESSOR SIMULATION INVESTIGATION.
AD-662 361

*THOMBS, H. O.
* * *
DEVELOPMENT OF AN INTERMEDIATE CAPACITY, HIGHSPEED MAGNETIC FILM MEMORY SYSTEM.
AD-600 271

*THOMREY, R.D
* * *
FLUX LOGIC PERMALLOY SHEET MEMORY
AD-271 089

*TOTSCHEK, ROBERT A.
* * *
A USER-ORIENTED PRIORITY SCHEME FOR A TIME-SHARING SYSTEM.
AD-616 931
* * *
AN EMPIRICAL INVESTIGATION INTO THE BEHAVIOR OF THE SDC TIME-SHARING SYSTEM.
AD-622 [illegible]

*TURN, R.
* * *
SYSTEM IMPLICATIONS OF INFORMATION PRIVACY.
AD-680 847

*ULIN, D. V.
* * *
MATRIX COMPUTER FOR CALCULATING CORRELATION FUNCTIONS.
AD-662 838

*VANHAALEN, RICHARD H.
* * *
COORDINATE READER AND CARD PUNCH ON TABULATOR.
AD-638 131

*VANHORN, R. L.
* * *
DESIGN CONSIDERATIONS FOR CENSOR, A COMPUTER-ASSISTED MAINTENANCE PLANNING AND CONTROL SYSTEM.
AD-659 733

*VARENA, ALBIN [illegible]
* * *
STEPS TOWARD A GENERAL PURPOSE TIME SHARING SYSTEM USING LARGE CAPACITY CORE STORAGE AND TSS/360.
AD-6[illegible] 378

*VASHKEVICH, N. P.
* * *
MEMORY DEVICE WITH EXTERNAL SELECTION (ZAPOMINAJUSHCHEE STROISTVO S VNESHNIM VYBOROM).
AD-664 300

*WAIG, BRICE
* * *
[illegible] SYSTEMS.
AD-6[illegible]

*WALTON, THOMAS [illegible]
* * *
A TECHNIQUE FOR UTILIZING THE IBM OR THE RCA RANDOM-ACCESS MASS-MEMORY DEVICES TO STORE THE DATA BASE OF A COMMAND AND CONTROL INFORMATION PROCESSING SYSTEM.
AD-610 211

*WANG, L.K
* * *
A SPIN-ECHO MEMORY FOR A CARRIER TYPE DIGITAL COMPUTER
AD-284 290

[illegible] ELINN

* * *

[illegible]: AN ON-LINE SYSTEM FOR [illegible] COMPUTATION AND ANALYSIS.
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* * *

PROJECT [illegible]
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PROJECT [illegible]
[illegible]

*WAX, ELLEN V.

* * *

MAGIC PAPER - AN ON-LINE SYSTEM FOR THE MANIPULATION OF SYMBOLIC MATHEMATICS.
[illegible]

*WEES, R. F. A.

* * *

NASA FALLOUT AND TRANSIT DOSE RATE MEASUREMENT SYSTEM.
[illegible]

*WEBER, H.

* * *

MICROELECTRONIC CIRCUITRY IN MICRO-MODULES.
AD-414 715

*[illegible], PAUL M.

* * *

THE PDP-8 AS A SATELLITE PROCESSOR.
AD-642 [illegible]

*WEISMAN, CLARK

* * *

TIME-SHARING SYSTEMS: REAL AND IDEAL.
[illegible]

* * *

THE SDC TIME-SHARING SYSTEM REVISITED.
AD-486 477

*WELD, S.

* * *

MICROELECTRONIC CIRCUITRY IN MICRO-MODULES.
AD-414 715

*WESTEL, ANDREW E.

* * *

THE IMPACT OF THE NEW TECHNOLOGY ON COMMAND SYSTEM DESIGN.
AD-636 961

*WEST, GERALD D.

* * *

ADVANCED COMPUTER TECHNIQUES APPLICABLE TO SPACE AND RANGE PROBLEMS.
AD-623 728

*WILSON, JAMES B

* * *

COLLECTED PAPERS ON SWITCHING CIRCUIT THEORY AND LOGICAL AND SYSTEMS DESIGN
AD-266 580

*WINETT, JOEL M.

* * *

ON LINE DOCUMENTATION OF THE COMPATIBLE TIME-SHARING SYSTEM.
AD-629 110

*WOLF, ROBERT S.

* * *

MAGIC PAPER - AN ON-LINE SYSTEM FOR THE MANIPULATION OF SYMBOLIC MATHEMATICS.
AD-643 313

*WOLFBERG, MICHAEL S.

* * *

THE PDP-8 AS A SATELLITE PROCESSOR.
AD-642 353

* * *

THE INPUT/OUTPUT AND CONTROL SYSTEM OF THE MOORE SCHOOL PROBLEM SOLVING FACILITY.
AD-653 965

*WOOD, R. C.

* * *

INTERARRIVAL STATISTICS FOR TSS.
AD-622 001

*WOOD, ROGER C.

* * *

TIME-SHARED COMPUTER OPERATIONS WITH BOTH INTERARRIVAL AND SERVICE TIMES EXPONENTIAL.
AD-611 866

* * *

TIME-SHARED COMPUTER OPERATIONS WITH BOTH INTERARRIVAL AND SERVICE TIMES EXPONENTIAL.
AD-622 016

*YANG, C. C.

. . .

A CRYOGENIC ASSOCIATIVE MEMORY
SYSTEM FOR INFORMATION RETRIEVAL.
AD-644 439

*YATES, JOHN E

. . .

A TIME SHARING SYSTEM FOR THE PDP-1
COMPUTER
AD-285 851

*YAU, S. S.

. . .

A CRYOGENIC ASSOCIATIVE MEMORY
SYSTEM FOR INFORMATION RETRIEVAL.
AD-644 439

*ZIEME, THEODORE W.

. . .

DATA MANAGEMENT: A COMPARISON OF
SYSTEM FEATURES.
AD-661 861

*ZINK, H. D.

. . .

A DIRECT BINARY DIVIDER FOR SPECIAL
PURPOSE DIGITAL COMPUTERS.
AD-658 374

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F AD-640 493

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F AD-629 867

*AF 19(628)-5098
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(WADC-TR-55-173)
F AD-[illegible] 961

•AF30 [illegible] 3040
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F AD-[illegible] 999
RCA LABS DIV RADIO CORP OF AMERICA
PRINCETON N J
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13. ABSTRACT

This Unclassified and Unlimited bibliography compiles references dealing specifically with the role of computers in information sciences.

Volume I contains 249 references grouped under two major headings: Time Shared, On-Line, and Real Time Systems; and Computer Components.

The references are arranged in accession number (AD-number) sequence within each heading. Four indexes, AD-Numeric, Corporate Author/Monitoring Agency, Personal Author, and Contract, are appended to facilitate access to references.

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