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1 OF 3
AD A036525



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COMPUTERS IN INFORMATION SCIENCES

DIGITAL COMPUTER SYSTEMS

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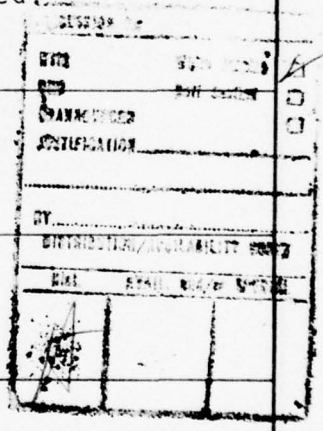
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*Digital Computers	Computer Architecture
*Information Sciences	Computer Programming
Digital Systems	Computer Applications
Data Processing	

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This bibliography contains 170 unclassified and unlimited citations primarily dealing with Computers In Information Sciences and compiles references dealing specifically with Digital Computer Systems. Indexes of Corporate Author-Monitoring Agency, Subject, Title and Personal Author are included.

107 200

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F O R E W O R D

This bibliography consists of 170 selected unclassified and unlimited citations on *Computers In Information Sciences: Digital Computer Systems*.

Citations were taken from entries processed into the Defense Documentation Center's data bank during the period of January 1968 to December 1976.

This bibliography supersedes DDC report bibliography on *Computers In Information Sciences: Digital Computer Systems*, AD-758 400, DDC-TAS-73-15, dated April 1973.

Individual entries are arranged in AD number sequence under the heading AD Bibliographic References. Computer generated indexes of Corporate Author-Monitoring Agency, Subject, Title and Personal Author are provided.

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OFFICIAL

Hubert E. Sauter

HUBERT E. SAUTER
Administrator
Defense Documentation Center

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PERSONAL AUTHOR. P-1

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 665 970 9/5
NAVAL RESEARCH LAB WASHINGTON D C

DISCRETE LEVELS OF INTEGRATION AS AN AID IN THE DESIGN OF DIGITAL EQUIPMENTS. (U)

DESCRIPTIVE NOTE: MEMORANDUM REPT.,
JAN 68 27P SHAY,BARRY P. ;BECK,HUGO M. ;
REPT. NO. NRL-MR-1846

UNCLASSIFIED REPORT

DESCRIPTORS: (•INTEGRATED CIRCUITS, DIGITAL SYSTEMS), LOGIC CIRCUITS, DESIGN, DIGITAL COMPUTERS, ANALOG-TO-DIGITAL CONVERTERS, RELAXATION OSCILLATORS, COUNTING METHODS, CODING, SEQUENCES(MATHEMATICS), PSEUDO-RANDOM SYSTEMS (U)
IDENTIFIERS: DIGITAL FILTERS, GRAPHS(CHARTS), LARGE SCALE INTEGRATED CIRCUITS (U)

DIRECTED TOWARD FUNCTIONAL LARGE SCALE INTEGRATION, A SERIES OF MATHEMATICAL FUNCTIONS HAVE BEEN SELECTED, AND THE CORRESPONDING HARDWARE REALIZING THESE FUNCTIONS HAVE BEEN DESIGNED AND IMPLEMENTED. PARTICULAR CARE HAS BEEN TAKEN TO SELECT THE MOST USEFUL AND RELIABLE, EASILY UNDERSTOOD AND MAINTAINED GROUP OF FUNCTIONAL 'BUILDING BLOCKS.' AMONG THESE ARE RATIO AND UP-DOWN RIPPLE COUNTERS, PARALLEL NON-RIPPLE COUNTERS, AND A CLASS OF DIGITAL FILTERS USED FOR ENCODING AND DECODING PSEUDO-RANDOM BINARY SEQUENCES. THE FUNCTIONS CHOSEN CAN BE IMPLEMENTED WITH MICROCIRCUITS OR IN ANY FORM OF LARGE SCALE INTEGRATION. A MICROCIRCUIT PACKAGE CONTAINING A RATIO COUNTER TO CONVERT A 100 KHZ SIGNAL TO A 60 HZ DIGITAL SIGNAL HAS ALSO BEEN BUILT TO DEMONSTRATE THE EASE OF IMPLEMENTING THE FUNCTIONAL BUILDING BLOCKS IN MICROCIRCUIT FORM. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 668 594 20/14 9/2 17/9
SPACE DISTURBANCES LAB BOULDER COLO

A FLEXIBLE INCREMENTAL PHASE SERVO WITH DIGITAL OUTPUTS FOR INDICATING PHASE AND DOPPLER FREQUENCY OF IONOSPHERICALLY PROPAGATED RADIO SIGNALS. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
MAR 68 48P GRUBB,RICHARD N. ;
REPT. NO. SDL-7
CONTRACT: ARPA ORDER-932

UNCLASSIFIED REPORT

DESCRIPTORS: (*IONOSPHERIC PROPAGATION, RADIO SIGNALS), (*RADIO SIGNALS, DOPPLER EFFECT), TRACKING, FREQUENCY MULTIPLIERS, DOPPLER SYSTEMS, AUTOMATIC, DATA PROCESSING, SPECIFICATIONS, DESIGN, VERY LOW FREQUENCY, HIGH FREQUENCY, PHASE SHIFT CIRCUITS, RECORDING SYSTEMS, DIGITAL SYSTEMS (U)

A FLEXIBLE SOLID-STATE PHASE-TRACKING SYSTEM DESIGNED FOR USE ON IONOSPHERICALLY PROPAGATED RADIO SIGNALS IS DESCRIBED. THE OUTPUT IS BASICALLY DIGITAL IN FORM AND SUITABLE FOR USE WITH AUTOMATIC DATA PROCESSING SYSTEMS. THE UNIT PROVIDES AN OUTPUT EQUAL TO THE RATE OF CHANGE OF PHASE OR DOPPLER FREQUENCY OF THE INCOMING SIGNAL AND IS SUFFICIENTLY FLEXIBLE TO BE USED ON VLF THROUGH HF SIGNALS. THE DESIGN IS DESCRIBED AND SPECIFICATIONS OF THE PROTOTYPE UNIT INCLUDED. SOME EXAMPLES OF RESULTS OBTAINED USING THE EQUIPMENT ARE GIVEN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 668 966 17/5 9/2
WASHINGTON UNIV ST LOUIS MO COMPUTER SYSTEMS LAB

DEVELOPMENT OF AN ON-LINE IMAGE PROCESSING SYSTEM FOR THE LINC. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
FEB 68 133P GUIGNON,JOHN E. , JR.;
KLINE,RAYMOND M. ;
REPT. NO. TR-5
CONTRACT: SD-302, ARPA ORDER-655

UNCLASSIFIED REPORT

DESCRIPTORS: (•OPTICAL IMAGES, •DIGITAL COMPUTERS), (•DATA TRANSMISSION SYSTEMS, •OPTICAL SCANNING), REVIEWS, DIGITAL TO ANALOG CONVERTERS, INPUT OUTPUT DEVICES, DATA PROCESSING, MATHEMATICAL MODELS, ANALOG-TO-DIGITAL CONVERTERS, SUBROUTINES, SEQUENCES(MATHEMATICS), DISPLAY SYSTEMS, OPERATION, OSCILLOSCOPES, MAN MACHINE SYSTEMS (U)
IDENTIFIERS: •IMAGE PROCESSING SYSTEMS, LINC COMPUTERS (U)

THE DEVELOPMENT OF AN ON-LINE IMAGE PROCESSING SYSTEM FOR THE LINC COMPUTER IS DESCRIBED WITH BOTH HARDWARE AND SOFTWARE DETAILS BEING CONSIDERED. THE PURPOSE OF THE SYSTEM IS TO OPERATE ON VARIOUS TYPES OF OPTICAL IMAGES ENDEAVORING TO PROCESS THEM SO THAT A MAXIMUM AMOUNT OF USEFUL INFORMATION IS RETRIEVED FOR FINAL INTERPRETATION BY THE OBSERVER. BESIDES OTHER PROCESSING TECHNIQUES, CONTRAST ENHANCEMENT AND SUBTRACTION HAVE BEEN IMPLEMENTED INTO THE SYSTEM TO ACHIEVE THIS PURPOSE. A MATHEMATICAL MODEL OF THE SYSTEM IS INVESTIGATED AND EQUATIONS DESCRIBING ITS CAPABILITIES ARE DERIVED. RESULTS SHOWING SEVERAL PICTURES BEFORE AND AFTER PROCESSING AS WELL AS DATA VERIFYING THE MATHEMATICAL MODEL ARE ALSO PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 669 598 13/8 9/2
EDGEWOOD ARSENAL MD

FORECAST OF NUMERICAL CONTROL TECHNOLOGIES, (U)

APR 68 16P WILLIAMS,JOHN C. ;
REPT. NO. EA-SP-400-12

UNCLASSIFIED REPORT

DESCRIPTORS: (*MACHINE TOOLS, CONTROL SYSTEMS), (*MACHINE SHOP PRACTICE, AUTOMATION), DIGITAL SYSTEMS, MACHINE SHOP PRACTICE, MANUFACTURING, PUNCHED TAPE, DIGITAL COMPUTERS, GRAPHICS, PRODUCTION, PERIODICALS, ARMY RESEARCH, FLUIDICS (U)
IDENTIFIERS: COMPUTER AIDED DESIGN, NUMERICAL CONTROL (U)

A MAJOR PORTION OF OUR DEFENSE NEEDS TODAY FALLS IN THE GENERAL CATEGORY OF SMALL LOTS AND SHORT RUNS. WE NEED A MANUFACTURING TECHNOLOGY THAT CAN RESPONSIVELY AND ECONOMICALLY PRODUCE HARDWARE IN SMALL LOTS. IT MUST READILY ADAPT TO QUICK CHANGEOVER FROM ONE SHORT RUN TO THE NEXT. NUMERICAL CONTROL (N/C) HAS INTRODUCED A NEW LANGUAGE TO MANUFACTURING, A LANGUAGE THAT PERMITS COMMUNICATIONS BETWEEN MAN AND MACHINE TOOLS OR BETWEEN MANUFACTURING CONCERNS. SINCE N/C EQUIPMENT IS PRIMARILY DIGITAL CONTROLS, THEN DIGITAL DATA BECOMES THE COMMUNICATIONS MEDIA. RECOGNIZING N/C AS DIGITALLY-CONTROLLED EQUIPMENT, THE IDEA OF AN AUTOMATED JOB SHOP CONTROLLED BY A DIGITAL COMPUTER IS NOT UNIQUE. CONSEQUENTLY, IN THE ULTIMATE ANALYSIS, N/C WILL NO LONGER EXIST AS A SERIES OF SEPARATE ENTITIES BUT AS A TOTAL SYSTEM UNDER THE CONTROL OF A DIGITAL PROCESS COMPUTER. THE INITIAL PHASE OF THIS INVESTIGATION HAS BEEN COMPLETED, AND ADVANCE WORK IS PROGRESSING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 670 550 9/2
WASHINGTON UNIV SEATTLE DEPT OF ELECTRICAL ENGINEERING

MODULARITY IN DESIGN: THE APPLICATION OF SHIFT REGISTERS IN SECONDARY STATE ASSIGNMENT, (U)

JAN 68 102P O'KEEFE,KENNETH H. ;

CONTRACT: AF-AFOSR-0939-68
PROJ: AF-9769
TASK: 976904
MONITOR: AFOSR 68-1300

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIGITAL SYSTEMS, SYNTHESIS), (*SHIFT REGISTERS, *MODULES(ELECTRONICS)), SYNCHRONIZATION(ELECTRONICS), COMPUTER LOGIC, OPTIMIZATION, ALGORITHMS, THEOREMS, THESES (U)
IDENTIFIERS: SEQUENTIAL MACHINES (U)

THE REPORT INTRODUCES A METHOD OF SYNTHESIS OF DIGITAL SYSTEMS AND DEVELOPS A THEORY BY WHICH THIS NEW CONCEPT MAY BE APPLIED TO PROBLEMS OF BOTH THEORETICAL AND PRACTICAL SIGNIFICANCE. THE PARTICULAR INSTRUMENT CHOSEN TO ILLUSTRATE THE THEORY IS A SET OF MODULES OR BUILDING BLOCKS, VIZ., SHIFT REGISTERS OF EQUAL LENGTH. IT IS SHOWN THAT THIS MODULE TYPE HAS CERTAIN PROPERTIES (NOT FOUND IN BINARY BUILDING BLOCKS) WHICH ARE COMMON TO THE GENERAL DIGITAL BUILDING BLOCK AND THEREFORE THE DEVELOPMENT HERE REPRESENTS A FIRST STEP IN OBTAINING A THEORY FOR SYSTEM DESIGN USING NON-BINARY MODULES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 671 865 9/2 17/2
NATIONAL MILITARY COMMAND SYSTEM SUPPORT CENTER WASHINGTON D C

DATA TRANSMISSION SYSTEM (TELTAP II). GENERAL DESCRIPTION, OPERATOR'S MANUAL AND PROGRAM DESCRIPTION. (U)

DESCRIPTIVE NOTE: COMPUTER SYSTEMS MANUAL,
MAR 68 59P STRAUB,LESTER R. ;
REPT. NO. NMCSSC-CSM-7A-67

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA TRANSMISSION SYSTEMS, TELEPHONE SYSTEMS), (*DATA PROCESSING, *INSTRUCTION MANUALS), DIGITAL SYSTEMS, ERRORS, SECURE COMMUNICATIONS, COMPUTER PROGRAMS, MAGNETIC TAPE, SYNCHRONIZATION(ELECTRONICS), COMPUTER OPERATORS, REDUNDANT COMPONENTS, SUBROUTINES, FLOW CHARTING, CRYPTOGRAPHY (U)
IDENTIFIERS: NATIONAL MILITARY COMMAND SYSTEM (U)

TELEPHONE TAPE (TELTAP II) IS A SOFTWARE SYSTEM DESIGNED TO PROVIDE HIGH-SPEED DATA TRANSMISSION CAPABILITIES TO AND FROM A REMOTE DATA PROCESSING CENTER. THE SYSTEM TRANSMITS DATA FOR A MAGNETIC TAPE STATION VIA A CONTROL DATA 8090 COMPUTER SYSTEM, UTILIZING A CDC 8529 DATA SET CONTROLLER TO ALLOW COMPUTER CONTROL OF THE TRANSMISSION HARDWARE. AN ENCRYPTING DEVICE IS USED FOR SECURITY PURPOSES. TELTAP II PROVIDES FOR TRANSMITTING ANY DATA CAPABLE OF BEING RECORDED ON MAGNETIC TAPE IN PHYSICAL RECORDS NOT TO EXCEED 3000 SIX-BIT CHARACTERS IN LENGTH. THE COMPUTER OPERATORS COMMUNICATES BY A DIRECT LINE TELEPHONE BETWEEN TERMINALS TO COORDINATE DATA TRANSMISSIONS. THE PROGRAM PROVIDES AN EFFECTIVE DATA TRANSFER RATE OF APPROXIMATELY 78.4/79.6 TO 2400/4920 CHARACTERS PER SECOND. THIS EFFECTIVE RATE IS DEPENDENT ON THE NUMBER OF CHARACTERS IN EACH TAPE BLOCK (THE LONGER RECORDS BEING MORE EFFICIENT DUE TO FEWER INTER-RECORD GAPS ON TAPE), AND IF THE PROGRAM HAS TO PERFORM ITS OWN PRE/POST PROCESSING ('PACKING/UNPACKING'). THE PROGRAM ALSO PROVIDES A RECOVERY PROCEDURE IN THE EVENT THAT THE COMMUNICATIONS EQUIPMENT LOSSES SYNC, AND MANUAL INTERVENTION BECOMES NECESSARY. ERROR DETECTION IS INCLUDED TO MINIMIZE ERRORS. THIS IS DONE BOTH IN THE TRANSMISSION OF DATA AND IN THE HANDLING OF MAGNETIC TAPE INPUT/OUTPUT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 674 421 17/2 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS

ANALYSIS OF DIGITAL AND ANALOG FORMANT SYNTHESIZERS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 68 42P GOLD,BERNARD ;RABINER,
LAWRENCE R. ;
REPT. NO. TR-465
CONTRACT: DA-28-043-AMC-02536(E)
PROJ: DA-20014501B31F

UNCLASSIFIED REPORT

DESCRIPTORS: (•SPEECH REPRESENTATION, •ELECTRICAL NETWORKS), DIGITAL SYSTEMS, SIMULATION, DIGITAL COMPUTERS, SYNTHESIS, SIGNAL-TO-NOISE RATIO, RESONATORS, SAMPLING, CORRECTIONS, FREQUENCY, TRANSFER FUNCTIONS (U)
IDENTIFIERS: •DIGITAL FILTERS (U)

A DIGITAL FORMANT IS A RESONANT NETWORK BASED ON THE DYNAMICS OF SECOND-ORDER LINEAR DIFFERENCE EQUATIONS. A SERIAL CHAIN OF DIGITAL FORMANTS CAN APPROXIMATE THE VOCAL TRACT DURING VOWEL PRODUCTION. THE DIGITAL FORMANT IS DEFINED AND ITS PROPERTIES ARE DISCUSSED, USING Z-TRANSFORM NOTATION. THE RESULTS OF DETAILED FREQUENCY RESPONSE COMPUTATIONS OF BOTH DIGITAL AND CONVENTIONAL 'ANALOG' FORMANT SYNTHESIZERS ARE THEN PRESENTED. THESE RESULTS INDICATE THAT THE DIGITAL SYSTEM WITHOUT HIGHER POLE CORRECTION IS A CLOSER APPROXIMATION THAN THE ANALOG SYSTEM WITH HIGHER POLE CORRECTION. A SET OF MEASUREMENTS ON THE SIGNAL AND NOISE PROPERTIES OF THE DIGITAL SYSTEM IS DESCRIBED. SYNTHETIC VOWELS GENERATED FOR DIFFERENT SIGNAL-TO-NOISE RATIOS HELP SPECIFY THE REQUIRED REGISTER LENGTHS FOR THE DIGITAL REALIZATION. A COMPARISON BETWEEN THEORY AND EXPERIMENT IS PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 675 057 8/11
MICHIGAN UNIV ANN ARBOR INST OF SCIENCE AND TECHNOLOGY

COLLECTION AND ANALYSIS OF SEISMIC-WAVE PROPAGATION DATA. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. 1 JUN 67-31 MAY 68, SEP 68 92P WILLIS,DAVID E. ;JACKSON, PHILIP L. ;
REPT. NO. 8071-15-P
CONTRACT: AF 49(638)-1759, ARPA ORDER-292

UNCLASSIFIED REPORT

DESCRIPTORS: (*SEISMIC WAVES, PROPAGATION), SEISMOMETERS, SCATTERING, REFRACTION, ATTENUATION, STRUCTURAL GEOLOGY, BACKGROUND, NOISE, MICROSEISMS, COMPUTER PROGRAMS, EARTHQUAKES, VELOCITY, FLOW CHARTING, GREAT LAKES, MICHIGAN, DATA PROCESSING, DIGITAL SYSTE(U)
IDENTIFIERS: EASTERN UNITED STATES, EARTH CRUST, LASA(LARGE APERTURE SEISMIC ARRAY), LARGE APERTURE SEISMIC ARRAYS, MANTLE(EARTH), PRIMARY WAVES, SEISMIC NOISE, TRAVEL TIME, VELA UNIFORM (U)

THE REPORT DISCUSSES THE RESULTS OF AN EXTENSIVE LONG-RANGE REVERSED REFRACTION PROFILE WHICH TRAVERSES THE MICHIGAN BASIN AND THE APPALACHIAN MOUNTAINS. PARTICULAR EMPHASIS IS PLACED ON THE ATTENUATION OF FIRST COMPRESSIONAL WAVE ARRIVALS AND ON CRUSTAL-UPPER MANTLE STRUCTURE. ALSO INCLUDED ARE RESULTS OF A SURVEY ON LAKE BOTTOM SEISMIC BACKGROUND NOISE IN LAKE SUPERIOR. ALTHOUGH LARGE SIGNAL LEVELS WERE OBTAINED IN THE LAKE BOTTOM, LONG PERIODS OF HIGH BACKGROUND NOISE INDICATED THAT LAND BASED SEISMOGRAPHS ARE SUPERIOR. THEORETICAL STUDIES IN ELASTIC WAVE SCATTERING WERE MADE TO EVALUATE THE EFFECT OF NONHOMOGENEITIES ON THE PROPAGATION OF ELASTIC WAVES. THEORETICAL DEVELOPMENT OF MODE FILTERING (PREVIOUSLY DEMONSTRATED EMPIRICALLY), IS NEARLY COMPLETED. A LASA DIGITAL DATA CONVERTOR WAS DESIGNED, CONSTRUCTED, AND PUT INTO OPERATION. TWO- AND THREE-DIMENSIONAL SEISMIC RAY-TRACING TECHNIQUES USING DIGITAL MODELING WERE DEVELOPED. THESE TECHNIQUES ENABLE THE SEISMOLOGIST TO DETERMINE THE EFFECTS OF LATERAL INHOMOGENEITIES AND IRREGULARITIES IN VELOCITY INTERFACES ON TRAVEL TIME AND ATTENUATION OF SEISMIC WAVES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 676 607 9/5
SOUTHERN METHODIST UNIV DALLAS TEX INFORMATION AND CONTROL SCIENCES CENTER

OPTIMAL NON-RESETTING DATA RECONSTRUCTION, (U)

68 8P BOTTORFF,WILLIAM W. ;MELSA, JAMES L. ;

CONTRACT: F44620-68-C-0023, NSG-490
PROJ: AF-7921
TASK: 792101
MONITOR: AFOSR 68-2025

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN PROCEEDINGS IEEE CONFERENCE REGION III, NEW ORLEANS, LA., P13.4.1-13.4.6, 22-24 APR 68.

DESCRIPTORS: (*DIGITAL TO ANALOG CONVERTERS, INTEGRATORS), DIGITAL SYSTEMS, ANALOG SYSTEMS, SAMPLING, DIGITAL COMPUTERS, REAL TIME, CONTROL, INTEGRAL TRANSFORMS, APPROXIMATION(MATHEMATICS), ELECTRIC FILTERS, OPTIMIZATION (U)
IDENTIFIERS: LAPLACE TRANSFORM, SAMPLED DATA SYSTEMS (U)

THE APPLICATION AND OPTIMIZATION OF A CLASS OF NON-RESETTING DATA RECONSTRUCTION SYSTEMS ARE CONSIDERED. THE SYSTEM CONSISTS OF ONE NON-RESETTING INTEGRATOR WHOSE INPUT DEPENDS ON PAST SAMPLE VALUES AND WHICH MAY OR MAY NOT HAVE A CONTINUOUS FILTER ADDED. THE OPTIMIZATION IS ACCOMPLISHED BY MEANS OF A SPECTRAL APPROXIMATION AND THE APPLICATION OF A DIGITAL SEARCH PROGRAM. THE APPLICATION OF THIS DATA RECONSTRUCTION TECHNIQUE PERMITS ONE TO APPROXIMATE AND EVEN EXCEED THE PERFORMANCE OF HIGH-ORDER CLASSICAL HOLD CIRCUITS WHILE USING ONLY ONE NON-RESETTING INTEGRATOR. THE NON-RESETTING DATA RECONSTRUCTION TECHNIQUE DISCUSSED HERE SHOULD BE OF SIGNIFICANT PRACTICAL IMPORTANCE IN ANY APPLICATION WHERE HIGH PERFORMANCE DATA RECONSTRUCTION IS DESIRED WITH THE USE OF LESS ANALOG EQUIPMENT THAN IS NECESSARY FOR THE CLASSICAL HOLD CIRCUITS. IN ADDITION TO THE DEVELOPMENT OF THE NON-RESETTING HOLD CIRCUITS, THE PAPER PRESENTS A NUMBER OF GENERALIZED TECHNIQUES WHICH SHOULD BE OF VALUE IN THE STUDY OF ANY DATA RECONSTRUCTION SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 677 323 9/5 9/2
PRINCETON UNIV N J DEPT OF ELECTRICAL ENGINEERING

ROUND-OFF ERROR OF FLOATING-POINT DIGITAL FILTERS, (U)

OCT 68 10P KANEKO,T. ;LIU,B. ;

CONTRACT: AF-AFOSR-1333-67
PROJ: AF-9749
TASK: 974901
MONITOR: AFOSR 68-2113

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE ANNUAL ALLERTON CONFERENCE ON CIRCUIT AND SYSTEM THEORY (6TH), 2-4 OCT 68.

DESCRIPTORS: (*ELECTRIC FILTERS, *DIGITAL COMPUTERS), ERRORS, DIGITAL SYSTEMS, ACCURACY, STATISTICAL ANALYSIS, SEQUENCES(MATHEMATICS), NUMERICAL METHODS AND PROCEDURES, SYMPOSIA (U)
IDENTIFIERS: *DIGITAL FILTERS (U)

THIS PAPER IS CONCERNED WITH THE ACCURACY PROBLEM OF DIGITAL FILTERS. WHEN A COMPUTER USING FIXED-POINT ARITHMETIC IS USED FOR THE REALIZATION OF THE FILTER, THE PROBLEM HAS BEEN STUDIED EXTENSIVELY. THE ONLY RESULT AVAILABLE FOR FLOATING-POINT ARITHMETIC REALIZATION OF DIGITAL FILTERS IS AN ABSOLUTE UPPER BOUND ON THE ACCUMULATION OF THE ROUND-OFF ERROR USING A DETERMINISTIC APPROACH. THE BOUND IS OVER PESSIMISTIC AS TO BE EXPECTED. IN THIS PAPER, A STATISTIC APPROACH IS ADOPTED TO TREAT THE ROUND-OFF ERROR PROBLEM FOR FLOATING-POINT COMPUTER REALIZATION OF FILTERS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 677 461 17/9 17/2
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC CITY N J

EVALUATION OF UTILITY OF ANNOTATED WEATHER OUTLINES. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,
NOV 68 33P LEWIS,WILLIAM ;
REPT. NO. NA-68-43
PROJ: FAA-150-320-01X
MONITOR: FAA-RD 68-54

UNCLASSIFIED REPORT

DESCRIPTORS: (*METEOROLOGICAL RADAR, DISPLAY SYSTEMS), (*AIR TRAFFIC CONTROL SYSTEMS, METEOROLOGICAL RADAR); FEASIBILITY STUDIES, SIMULATION, TELEVISION EQUIPMENT, STORMS, DIGITAL SYSTEMS, EFFECTIVENESS, QUESTIONNAIRES, FLOW CHARTING, DATA PROCESSING (U)
IDENTIFIERS: EVALUATION (U)

SIMULATIONS WERE CARRIED OUT USING TWO METHODS OF PRESENTING RADAR WEATHER CONTOURS ON AIR TRAFFIC CONTROLLERS' DISPLAYS. THE FIRST WAS THE TELEVISING OF A SERIES OF MANUALLY PREPARED DISPLAYS CONSISTING OF ANNOTATED DOT (OUTER) AND X (INNER) CONTOURS. THE ANNOTATIONS CONSISTED OF SIMULATED REPORTS OF STORM HEIGHTS, TURBULENCE AND HAIL. THE SECOND WAS THROUGH DIGITAL RECORDINGS OF THE DIGITAL RADAR CHANNEL METHOD OF PRESENTING CONTOURS WHEREIN THREE RADAR ANTENNA SWEEPS BUILD UP THE DOTTED OUTLINE, THREE THE X OUTLINE AND SO ON CYCLICALLY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 682 672 5/8 9/2
NATIONAL RESEARCH COUNCIL OF CANADA OTTAWA (ONTARIO) RADIO AND ELECTRICAL ENGINEERING DIV

DIGITAL DISPLAY HARDWARE FOR MAN - MACHINE COMMUNICATIONS STUDIES, (U)

68 6P PULFER,J. K. ;
MONITOR: NRC 10552

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN UNIDENTIFIED JNL. NO COPIES FURNISHED.

DESCRIPTORS: (*MAN MACHINE SYSTEMS, DISPLAY SYSTEMS), DIGITAL SYSTEMS, COMPUTERS, CATHODE RAY TUBES, DATA PROCESSING, INPUT OUTPUT DEVICES (U)
IDENTIFIERS: *DATA PROCESSING TERMINALS (U)

SOME OF THE HARDWARE FEATURES OF A DIGITAL DISPLAY DEVELOPED FOR MAN - MACHINE COMMUNICATIONS RESEARCH ARE DESCRIBED. THE DISPLAY WAS DESIGNED AS A MODULAR, OPEN-ENDED, STRUCTURE WHICH CAN CHANGE AND ADAPT TO PROGRAMMERS' REQUIREMENTS. THE KNOWLEDGE AND EXPERIENCE GAINED FROM THIS RESEARCH PROJECT SHOULD BE USEFUL TO BOTH DISPLAY DESIGNERS AND DISPLAY USERS AS GRAPHICAL MAN-MACHINE INTERACTION BECOMES A MORE AND MORE IMPORTANT ASPECT OF COMPUTER USAGE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 684 839 17/1 9/4
GENERAL DYNAMICS CORP GROTON CONN ELECTRIC BOAT DIV

ANALYTICAL INVESTIGATIONS OF DIGITAL INFORMATION PROCESSING SYSTEMS, VOLUME III. (U)

DESCRIPTIVE NOTE: PROGRESS REPT.,
OCT 68 48P BOOTH,TAYLOR L. ;
REPT. NO. U417-68-099
CONTRACT: NONR-2512(00)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-823 798.

DESCRIPTORS: (*SONAR SIGNALS, *INFORMATION THEORY), DATA PROCESSING, SEQUENCES(MATHEMATICS), MATHEMATICAL PREDICTION, DIGITAL SYSTEMS, NOISE(RADIO) (U)
IDENTIFIERS: DATA SMOOTHING, DIGITAL FILTERS, SEQUENTIAL MACHINES, SIGNAL PROCESSING (U)

THE AIM OF THIS PROJECT IS TO PROVIDE BASIC KNOWLEDGE OF THE METHODS WHICH MAY BE USED BY A MAN-COMPUTER SYSTEM TO DETECT THE PRESENCE OF A TARGET, USING DATA FROM A PASSIVE SONAR RECEIVER. THIS RESEARCH CONSISTS OF ANALYTICAL STUDIES TO EVALUATE IMPORTANT SYSTEM PARAMETERS AND EXPERIMENTAL INVESTIGATIONS MEASURING OPERATOR PERFORMANCE UNDER VARIOUS OPERATING CONDITIONS. THE REPORT CONTAINED IN THIS VOLUME INVESTIGATES THE PROBLEM OF EXTRACTING INFORMATION FROM A SEQUENCE OF BINARY SIGNALS. THE OPTIMUM METHOD OF ESTIMATING PRESENT VALUES OF THE SEQUENCE, PREDICTING FUTURE VALUES, AND SMOOTHING PAST VALUES ARE PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 685 215 9/5 9/2
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

RESEARCH AND DEVELOPMENT OF HIGH SPEED PROCESSOR ARRAYS. (U)

DESCRIPTIVE NOTE: INTERIM REPT. NO. 1, 22 JUL-21 OCT 68.
JAN 69 18P
CONTRACT: AF 19(628)-5167
PROJ: AF-649L
MONITOR: ESD TR-69-47

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH PHILCO-FORD CORP., BLUE BELL, PA. MICROELECTRONICS DIV., REPT. NO. X-528.

DESCRIPTORS: (•INTEGRATED CIRCUITS, •DATA PROCESSING), GATES(CIRCUITS), LOGIC CIRCUITS, DIGITAL SYSTEMS, MANUFACTURING, CIRCUIT INTERCONNECTIONS, MICROELECTRONICS, MASKING (U)
IDENTIFIERS: COMPUTER AIDED DESIGN (U)

A RESEARCH AND DEVELOPMENT PROGRAM DIRECTED TOWARD THE DEVELOPMENT OF HIGH DENSITY, HIGH PERFORMANCE, COMPLEX DIGITAL ARRAYS AND THEIR APPLICATION IN HIGH SPEED SYSTEM FEASIBILITY STUDIES IS UNDER WAY. THE DESIGN EFFORT INCLUDED ESTABLISHMENT OF LAYOUT DESIGN RULES AND THE DESIGN OF THE BASIC HIGH SPEED ECL GATE WHICH WILL BE EMPLOYED IN THE PROCESSOR ARRAYS. COMPUTER AID IS BEING EMPLOYED TO GENERATE PHOTOMASK DESIGNS. DEVELOPMENT OF HIGH YIELD MICROCIRCUIT AND MULTILEVEL INTERCONNECTION TECHNIQUES HAS CONTINUED. A MICROCIRCUIT STUDY VEHICLE, TO BE USED IN STUDYING THE THERMAL ASPECTS OF PACKAGING HIGH DENSITY ARRAYS HAS BEEN DESIGNED AND FABRICATED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 686 082 17/2
MITRE CORP BEDFORD MASS

HQ USAF COMMAND POST DATA FLOW STUDY, (U)

DEC 68 64P MACKEY,T. A. ;PENNEY,J. C. ;

REPT. NO. MTR-744
CONTRACT: AF 19(628)-5165
PROJ: AF-512V
MONITOR: ESD TR-68-292

UNCLASSIFIED REPORT

DESCRIPTORS: (•DATA TRANSMISSION SYSTEMS, MANAGEMENT PLANNING AND CONTROL), DIGITAL SYSTEMS, DIGITAL COMPUTERS, PREDICTIONS, MAGNETIC TAPE, PUNCHED CARDS (U)
IDENTIFIERS: AUTODIN(AUTOMATIC DIGITAL NETWORK), AUTOMATIC DIGITAL NETWORK (U)

THE PURPOSE OF THIS STUDY WAS TO ANALYZE THE HQ USAF COMMAND POST COMMUNICATIONS DATA FLOW BETWEEN THE AUTODIN DATA TRANSMISSION NETWORK AND THE COMMAND POST DATA MANAGEMENT SYSTEM. THIS STUDY WAS CONDUCTED IN LIGHT OF THE PHASEOVER FROM THE IBM 1410 TO THE IBM 360/50. ALTERNATIVE APPROACHES FOR DATA FLOW IMPROVEMENTS WERE CONSIDERED AND AN OVERALL PLAN IS PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 687 906 9/2 17/1 20/1
SCRIPPS INSTITUTION OF OCEANOGRAPHY SAN DIEGO CALIF MARINE PHYSICAL LAB

DICANNE, A REALIZABLE ADAPTIVE PROCESS, (U)

69 9P ANDERSON,VICTOR C. ;
REPT. NO. MPL-U-73/67
CONTRACT: NONR-2216(05), N00014-67-A-0109

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN JNL. OF THE ACOUSTICAL SOCIETY OF AMERICA, V45 N2 P398-405 FEB 69.

DESCRIPTORS: (*UNDERWATER SOUND SIGNALS, *DATA PROCESSING), SONAR SOUND ANALYZERS, DIGITAL SYSTEMS, REAL TIME, ADAPTIVE SYSTEMS, INTERFERENCE, DESIGN (U)
IDENTIFIERS: DIGITAL INTERFERENCE CANCELLING ADAPTIVE NULL NETWOR, DICANNE(DIGITAL INTERFERENCE CANCELLING ADAPTIVE NUL (U)

DICANNE (DIGITAL INTERFERENCE CANCELLING ADAPTIVE NULL NETWORK EQUIPMENT) IS A REAL-TIME DIGITAL PROCESSOR THAT IS DESIGNED TO REJECT PLANEWAVE INTERFERENCE FROM AN OPERATOR-CONTROLLED DIRECTION PRIOR TO NORMAL BEAM FORMING. THE DESCRIPTION INCLUDES COMPUTED CHARACTERISTICS OF THE SPECIFIC ARRAY GEOMETRY SELECTED AND A FUNCTIONAL OUTLINE OF THE DIGITAL PROCESSING EQUIPMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 688 606 9/4
NORTH CAROLINA STATE UNIV RALEIGH N.C DEPT OF ELECTRICAL ENGINEERING

A STUDY OF DIGITAL ENCODING SYSTEMS. (U)

DESCRIPTIVE NOTE: ANNUAL SCIENTIFIC PROGRESS REPT. NO. 1, 1 SEP 68-1 APR 69,
APR 69 167P O'NEAL,JOHN B. , JR;
CONTRACT: F44620-69-C-0033
PROJ: AF-7921
MONITOR: AFOSR 69-1383TR

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON PROJECT THEMIS.

DESCRIPTORS: (*CODING, DIGITAL SYSTEMS), THEORY, SPEECH, VIDEO SIGNALS, PATTERN RECOGNITION, PROCESSING, COMPUTER PROGRAMMING, COMPUTERS, PULSE CODE MODULATION (U)
IDENTIFIERS: SIGNAL PROCESSING SYSTEMS, THEMIS PROJECT (U)

THE RESEARCH PROGRAM IS DESIGNED TO ACCOMPLISH TWO PRIMARY OBJECTIVES: (1) TO OBTAIN A BASIC UNDERSTANDING OF THE DIGITAL ENCODING PROCESSES AND TO DERIVE AN OPTIMUM DIGITAL ENCODING ALGORITHM UNDER CERTAIN GENERAL CONDITIONS AND (2) TO DETERMINE EXPLICITLY WHAT KINDS OF PRACTICAL DIGITAL ENCODING EQUIPMENT SHOULD BE USED FOR THE VARIOUS TASKS WHICH REQUIRE IT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 688 743 9/2 9/5
ILLINOIS UNIV URBANA COORDINATED SCIENCE LAB

A MODULE DIAGNOSTIC PROCEDURE FOR COMBINATIONAL LOGIC, (U)

APR 69 127P POWELL,THEO J. ;
REPT. NO. R-413
CONTRACT: DAAB07-67-C-0199, NSF-GK-1663

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIGITAL COMPUTERS, RELIABILITY(ELECTRONICS)), (*MODULES(ELECTRONICS), FAILURE(ELECTRONICS)), LOGIC CIRCUITS, GATES(CIRCUITS), COMPUTER LOGIC, DIGITAL SYSTEMS, INTEGRATED CIRCUITS, SIMULATION, THESES (U)
IDENTIFIERS: FAULT DETECTION (U)

A METHOD TO DIAGNOSE MODULES FOR COMBINATIONAL LOGIC IS PRESENTED. INCLUDED IS A PROCEDURE TO GENERATE A SET OF DETECTION TESTS FOR A MODULE CALLED THE FAULT DETECTION PROCEDURE (FD-PROCEDURE) AND A METHOD FOR GENERATING A SET OF DIAGNOSTIC TESTS FOR A COMBINATIONAL CIRCUIT OF MODULES. THE METHOD FOR GENERATING A DIAGNOSTIC SET OF TESTS FIRST FINDS A SET OF TESTS WHICH DETECTS THE FAULTS IN THE TOAL CIRCUIT, DETERMINES WHICH FAULTS IN DIFFERENT MODULES NEED TO BE IDENTIFIED AND GENERATES THE REMAINING NECESSARY TESTS BY AN APPLICATION OF AN EXCLUSIVE-OR OPERATION TO COMPLETE THE DIAGNOSIS. A PROOF THAT THE FD-PROCEDURE GENERATES A SET OF TESTS WHICH DETECTS ALL DETECTABLE FAULTS FOR A MODULE IS GIVEN. THE METHOD TO GENERATE DIAGNOSTIC TESTS ALWAYS IDENTIFIES EVERY FAULTY MODULE WHICH CAN BE IDENTIFIED BECAUSE OF THE EXCLUSIVE-OR OPERATION. EXAMPLES AND COMPARISONS TO OTHER APPROACHES ARE GIVEN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 688 792 12/1 14/2
LOUISIANA STATE UNIV BATON ROUGE COLL OF ENGINEERING

OPTIMUM TUNING OF A SLOW SAMPLING DIGITAL CONTROL ALGORITHM. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 69 30P LOPEZ,ALFREDO M. ;MURRILL,
PAUL W. ;SMITH,CECIL L. ;
REPT. NO. THEMIS LSU-T-TR-2
CONTRACT: F44620-68-C-0021
PROJ: AF-9749
TASK: 974901
MONITOR: AFOSR 69-1411TR

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON PROJECT THEMIS: STUDIES IN DIGITAL AUTOMATA.

DESCRIPTORS: (*ADAPTIVE CONTROL SYSTEMS, ALGORITHMS), DIGITAL COMPUTERS, TIME SHARING, DIGITAL SYSTEMS, AUTOMATION, FEEDBACK, TRANSFER FUNCTIONS, INTEGRAL TRANSFORMS, SAMPLING (U)
IDENTIFIERS: COMPUTER ANALYSIS, CONTROL THEORY, DIGITAL AUTOMATA, FEEDBACK CONTROL, THEMIS PROJECT (U)

THE SELECTION OF CONTROL ALGORITHMS FOR DIRECT DIGITAL CONTROL LOOPS IS A DEGREE MORE DIFFICULT THAN THE SELECTION OF CONTINUOUS ANALOG CONTROLLERS, PRIMARILY BECAUSE ANALOG HARDWARE CONSIDERATIONS LIMIT THE SELECTION TO PROPORTIONAL, PROPORTIONAL-INTEGRAL (PI), OR PROPORTIONAL-INTEGRAL-DERIVATIVE (PID) CONTROLLERS. IN DIGITAL SYSTEMS THE COUNTERPART TO THE RESTRICTION IS THAT THE ALGORITHM MUST BE PROGRAMMABLE, WHICH IS INDEED NOT VERY RESTRICTIVE. IN ADDITION TO THIS, ANOTHER PARAMETER--THE SAMPLING TIME--IS ALSO INTRODUCED. THIS SAMPLING TIME MUST BE FAST ENOUGH TO INSURE REASONABLE CONTROL, BUT MUST NOT BE SO FAST THAT ALL THE COMPUTER'S TIME IS SPENT CALCULATING THE CONTROL ALGORITHMS. THE USE OF A DIGITAL COMPUTER AS A TIME SHARED CONTROLLER DOES OFFER NEW ADVANTAGES TO THE DESIGNER; BECAUSE HE IS NO LONGER RESTRICTED TO THE CONVENTIONAL MODES OF FEEDBACK CONTROL. THE PURPOSE OF THIS REPORT IS TO EXPLORE THE ADVANTAGES AND DISADVANTAGES OS USING AN ALGORITHM OTHER THAN THE DISCRETE EQUIVALENT OF THE TYPICAL ANALOG CONTROLLER. THE RUNING OF THIS ALGORITHM IS INVESTIGATED, FOLLOWED BY A COMPARISON OF ITS PERFORMANCE TO THAT OF PI AND PID ALGORITHMS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 688 836 9/2 9/5
ILLINOIS UNIV URBANA COORDINATED SCIENCE LAB

ON THE REPRESENTATION OF DIGITAL FAULTS, (U)

MAY 69 72P SCHERTZ,DONALD RALPH ;
REPT. NO. R-418
CONTRACT: DAAB07-67-C-0199, NSF-GK-1663

UNCLASSIFIED REPORT

DESCRIPTORS: (*LOGIC CIRCUITS, FAILURE(ELECTRONICS)), DIGITAL COMPUTERS, RELIABILITY(ELECTRONICS), GATES(CIRCUITS), TEST METHODS, DIGITAL SYSTEMS, SPECIAL FUNCTIONS(MATHEMATICAL), SET THEORY, GRAPHICS, THEOREMS, THESES (U)
IDENTIFIERS: BOOLEAN FUNCTIONS, FAULT DETECTION (U)

A NEW REPRESENTATION FOR FAULTS IN COMBINATIONAL DIGITAL SYSTEMS IS PRESENTED. FAULTS WHICH ARE INHERENTLY INDISTINGUISHABLE ARE IDENTIFIED AND COMBINED INTO CLASSES. THE BEHAVIOR OF THE CIRCUIT UNDER FAULT CONDITIONS IS REPRESENTED IN TERMS OF THESE CLASSES. THIS RESULTS IN A DESCRIPTION OF THE FAULTY CIRCUIT BY MEANS OF BOOLEAN EQUATIONS WHICH ARE READILY MANIPULATED FOR THE PURPOSE OF TEST GENERATION OR FAULT SIMULATION. A CONNECTION GRAPH INTERPRETATION OF THIS FAULT REPRESENTATION IS DISCUSSED. HEURISTICS METHODS FOR THE SELECTION OF EFFICIENT TESTS WITHOUT EXTENSIVE COMPUTATION ARE DERIVED FROM THESE CONNECTION GRAPHS. THE FAULT CLASSES FORM A GEOMETRIC STRUCTURE WHICH EFFECTIVELY SUBDIVIDES THE ORIGINAL CIRCUIT INTO FANOUT-FREE SEGMENTS. THIS FANOUT-FREE CHARACTERISTIC ALLOWS A SIMPLIFIED ANALYSIS OF MULTIPLE FAULT CONDITIONS. IT IS PROVEN THAT THE DETECTION OF A SMALL SUBSET OF MULTIPLE FAULTS GUARANTEES THE DETECTION OF ALL MULTIPLE FAULTS. FOR ANY GIVEN CIRCUIT, THE FAULTS IN THIS SUBSET MAY BE IDENTIFIED WITH A MINIMUM OF COMPUTATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 689 556 15/3 17/2 9/2
STANFORD RESEARCH INST MENLO PARK CALIF

CIVIL DEFENSE COMMUNICATIONS STUDIES: DATA TRANSMISSION STANDARDS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 69 131P COLAH,MANCHI S. ;STRUNK,
ROBERT W. ;
CONTRACT: DAHC20-67-C-0136
PROJ: SRI-6300-231

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING, CIVIL DEFENSE), (*CIVIL DEFENSE, *DATA TRANSMISSION SYSTEMS), DIGITAL SYSTEMS, STANDARDS, COMMAND AND CONTROL SYSTEMS, PROBLEM SOLVING, NETWORKS, COMPUTERS, TELEGRAPH SYSTEMS, VOICE COMMUNICATIONS, REAL TIME (U)
IDENTIFIERS: DIGITAL COMMUNICATION SYSTEMS (U)

THE STUDY DEALS WITH THE IMPORTANT CHARACTERISTICS OF DIGITAL DATA TRANSMISSION BETWEEN INTERCONNECTED CIVIL DEFENSE (CD) INSTALLATIONS, AND WITH THE APPLICATION OF ELECTRONIC DATA PROCESSING (EDP) AND COMPUTER TECHNOLOGY TO CIVIL DEFENSE PROBLEMS, THE EMPHASIS BEING ON LOCAL LEVELS. THE DATA TRANSMISSION STANDARDS ESTABLISHED BY THE UNITED STATES OF AMERICA STANDARDS INSTITUTE (USASI) ARE RECOMMENDED. THE STUDY PRESENTS VARIOUS WAYS IN WHICH EDP FACILITIES CAN CONTRIBUTE TO CD DECISION-MAKING, TOGETHER WITH SPECIFIC EXAMPLES OF IMPORTANT ITEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 691 729 4/2 17/2
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

CONVERTER, RADIOSONDE DATA, CV-857(XE-1)/
GMD. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
NOV 68 52P WILSON,FRANK W. ;
REPT. NO. ECOM-3074
PROJ: DA-1-T-062109-A-126
TASK: 1-T-062109-A-12603

UNCLASSIFIED REPORT

DESCRIPTORS: (•DATA TRANSMISSION SYSTEMS, METEOROLOGICAL PHENOMENA), RADIOSONDES, DIGITAL SYSTEMS, CIRCUITS, DATA PROCESSING, DESIGN (U)

THE CONVERTER, RADIOSONDE DATA, CV-857(XE-1) WAS DESIGNED AND DEVELOPED AS A METEOROLOGICAL DATA-HANDLING EQUIPMENT WHICH USES MODERN DIGITAL DATA TECHNIQUES AND UNIQUE CONVERSION METHODS. THE REPORT PRESENTS A TECHNICAL DESCRIPTION OF THIS EQUIPMENT, WITH PARTICULAR EMPHASIS DEVOTED TO THE DIGITAL CIRCUIT DESIGN PRINCIPLES AND TECHNIQUES INCORPORATED FOR CONVERTING, PROCESSING, AND RECORDING METEOROLOGICAL DATA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 692 735 9/4 12/1
MEASUREMENT ANALYSIS CORP LOS ANGELES CALIF

PROGRAMMING AND ANALYSIS FOR DIGITAL TIME SERIES DATA, (U)

68 283P ENOCHSON,LOREN D. ;OTNES, ROBERT K. ;

CONTRACT: N0001[4]-67-C-0073
MONITOR: SVM 3

UNCLASSIFIED REPORT

AVAILABILITY: PAPER COPY AVAILABLE FROM NAVY PUBLICATION AND PRINTING SERVICE OFFICE, WASHINGTON NAVY YARD, WASHINGTON, D. C. 20390. $8.00.

DESCRIPTORS: (*COMPUTER PROGRAMMING, TIME SERIES ANALYSIS), (*DATA PROCESSING, TIME SERIES ANALYSIS), (*VIBRATION, TIME SERIES ANALYSIS), (*TIME SERIES ANALYSIS, *INFORMATION THEORY), CORRELATION TECHNIQUES, CONFIDENCE LIMITS, FOURIER ANALYSIS, INTEGRAL TRANSFORMS, PROBABILITY DENSITY FUNCTIONS, NUMERICAL ANALYSIS, STOCHASTIC PROCESSES, POWER SPECTRA, SAMPLING, SERIES(MATHEMATICS), DIGITAL SYSTEMS (U)
IDENTIFIERS: COMPUTATION, DATA REDUCTION, DIGITAL FILTERS, FAST FOURIER TRANSFORM, FOURIER TRANSFORMATION, MATHEMATICAL ANALYSIS, FREQUENCY RESPONSE, NONSTATIONARY PROCESSES (U)

CONTENTS: PREPROCESSING OF DATA; DIGITAL FILTERING; FOURIER SERIES AND FOURIER TRANSFORM COMPUTATIONS; CORRELATION FUNCTION COMPUTATIONS; SPECTRAL DENSITY FUNCTION COMPUTATIONS; FREQUENCY RESPONSE FUNCTION AND COHERENCE FUNCTION COMPUTATIONS; PROBABILITY DENSITY FUNCTION COMPUTATIONS; NONSTATIONARY PROCESSES; AND TEST CASE AND EXAMPLES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 693 280 9/3 13/8
CENTRAL INTELLIGENCE AGENCY WASHINGTON D C FOREIGN DOCUMENTS DIV

DESIGN OF DIGITAL CONTROL SYSTEMS (SELECTED PORTIONS), (U)

MAY 69 104P PETROV,V. P. ;
REPT. NO. FTD-MT-24-109-69

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO. PROEKTOROVANIE TSIFROVYKH SISTEM KONTROLYA I UPRAVLENIYA, MOSCOW, 1967 P150-157, 169-200, 218-267.

DESCRIPTORS: (*CONTROL SYSTEMS, DESIGN), DIGITAL SYSTEMS, LOGIC CIRCUITS, AUTOMATIC, MODULES(ELECTRONICS), DIGITAL COMPUTERS, AUTOMATION, USSR (U)
IDENTIFIERS: *DIGITAL CONTROL SYSTEMS, TRANSLATIONS (U)

THE BOOK DEALS WITH PROBLEMS OF DESIGNING EQUIPMENT FOR AUTOMATIC CONTROL SYSTEMS CONSISTING OF DECENTRALIZED OBJECTS. FUNCTIONAL-ASSEMBLY METHODS OF DESIGNING VARIOUS-PURPOSE ELECTRONIC EQUIPMENT THROUGH THE USE OF STANDARD HIGH-RELIABILITY ELECTRONIC ELEMENTS ARE DESCRIBED. A NUMBER OF STANDARD ELEMENTS AND STRUCTURES ARE RECOMMENDED FOR WIDE APPLICATION IN THE DEVELOPMENT OF DIGITAL COMPUTER DEVICES, EQUIPMENT, UNITS OF INDUSTRIAL AUTOMATION, COMPUTING TECHNIQUE, CONTROL, COMMUNICATION, AND SIGNALING. METHODS FOR THE OPTIMIZATION (MINIMIZATION) OF SWITCHING CIRCUITS ARE DISCUSSED. A MULTI-PURPOSE TELEMETRIC-COMPUTING SYSTEM, SUITABLE FOR INDUSTRIAL PRODUCTION, DISPATCHING, AUTOMATIC CONTROL OF IRRIGATION INSTALLATIONS, OIL WELLS, WATER AND GAS DISTRIBUTION SYSTEMS, ETC., IS DESCRIBED. ALSO DISCUSSED ARE ENGINEERING CALCULATIONS FOR RELIABILITY AND NOISE IMMUNITY OF DATA TRANSMISSION SYSTEMS AND TECHNICAL AND ECONOMIC EFFICIENCY IN THE DESIGNING OF ELECTRONIC EQUIPMENT FOR AUTOMATIC CONTROL SYSTEMS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOH07

AD- 694 489 9/4 9/2
IOWA UNIV IOWA CITY DEPT OF MATHEMATICS

MULTIPLE ASYNCHRONOUS SIGNALS ON A SINGLE BINARY CHANNEL. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
SEP 69 16P REDDY,SUDHAKAR R. ;ROBINSON, JOHN P. ;
REPT. NO. THEMIS-UI-TR-18
CONTRACT: N00014-68-A-0500
PROJ: THEMIS-432

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON THE THEORY AND APPLICATION OF AUTOMATON THEORY.

DESCRIPTORS: (*DATA TRANSMISSION SYSTEMS, MULTIPLE OPERATION), (*CODING, DIGITAL SYSTEMS), CONTROL SYSTEMS, DATA PROCESSING, BINARY ARITHMETIC, DECODING (U)
IDENTIFIERS: AUTOMATON THEORY, BINARY DIGITS, PARALLEL PROCESSORS, THEMIS PROJECT, TURING MACHINES (U)

A MESSAGE CODING IS GIVEN WHICH ALLOWS SEVERAL DIFFERENT SIGNAL SOURCES TO ASYNCHRONOUSLY TRANSMIT BINARY MESSAGES OVER THE SAME CHANNEL. ASSUMING THAT THE MESSAGES ARE COMBINED UNDER BIT BY BIT LOGICAL OR AND ARE RECEIVED BY SHIFT-REGISTER DECODERS WHICH USE THE LOGICAL AND AS DECISION DEVICES, THEN A CONSTRUCTION IS GIVEN WHICH YIELDS A SET OF N DIFFERENT BINARY MESSAGES SUCH THAT UP TO K MESSAGES CAN EXIST AT ANY TIME INSTANT IN THE CHANNEL. THE MESSAGE LENGTH GROWS LINEARLY WITH N AND AS THE SQUARE OF K. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 694 588 17/9
STANFORD UNIV CALIF STANFORD ELECTRONICS LABS

OPTICAL DATA PROCESSING WITH APPLICATION TO RADAR PARAMETER ESTIMATION. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 69 88P WEAVER,C. S. ;RAMSEY,S. D. ;GOODMAN,J. W. ;ROSIE,A. ;SILVESTRI,A. ;

REPT. NO. TR-2306-2; SU-SEL-69-030
CONTRACT: AF33(615)-3589
PROJ: AF-4036
TASK: 403602

UNCLASSIFIED REPORT

DESCRIPTORS: (*RADAR PULSES, DATA PROCESSING), OPTICAL FILTERS, CORRELATION TECHNIQUES, SIGNAL-TO-NOISE RATIO, DIGITAL SYSTEMS (U)
IDENTIFIERS: OPTICS, SIGNAL PROCESSING (U)

THE EASE WITH WHICH AN OPTICAL SYSTEM CAN ACHIEVE AN EXTREMELY LARGE TIME-BAND-WIDTH PRODUCT MAKES OPTICAL FILTERS AND AUTOCORRELATION FUNCTION GENERATORS ATTRACTIVE FOR SIGNAL DETECTION AND PARAMETER ESTIMATION WHEN SIGNAL-TO-NOISE RATIOS ARE VERY LOW. THE THEORY OF AUTOCORRELATION FUNCTION GENERATION IS GIVEN, AND THE PRINCIPLES OF A NEW OPTICAL FILTER THAT OVERCOMES THE SEVERE POSITIONING REQUIREMENTS OF CONVENTIONAL OPTICAL FILTERS ARE DESCRIBED. THE RELATIONSHIP BETWEEN THE SIGNAL AMPLITUDE AND MATCHED-FILTER IMPULSE RESPONSE AMPLITUDE IS DISCUSSED, AND A METHOD FOR REDUCING A NOISE COMPONENT THAT IS COMMON TO ALL OPTICAL FILTERS IS GIVEN. A MATCHED FILTER WAS CONSTRUCTED AND USED TO DETECT A RADARLIKE PULSE WHEN THE SIGNAL-TO-NOISE RATIO WAS -40 DB. A DIGITAL COMPUTER, USED WITH AN OPTICAL SYSTEM, TO FILTER TIME SIGNALS WAS FOUND TO BE AS ACCURATE AS AN ALL-DIGITAL SYSTEM, BUT A SIGNIFICANT REDUCTION IN COMPUTATION TIME WAS REALIZED. THE THEORY OF AN OPTICAL-DIGITAL FILTER IS PRESENTED; ALSO, THE THEORY OF DISTORTIONS CAUSED BY 'NONLINEARITIES' IN OPTICAL FILTERS AND AUTOCORRELATION FUNCTION GENERATORS IS DEVELOPED IN AN APPENDIX. A RADAR PULSE PARAMETER ESTIMATOR THAT USES AN AUTOCORRELATOR AND ANOTHER THAT USES A BANK OF MATCHED FILTERS ARE PROPOSED. BOTH ESTIMATORS MAY BE REALIZED WITH OPTICAL TECHNIQUES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 698 122 9/4 9/2
HARVARD UNIV CAMBRIDGE MASS DIV OF ENGINEERING AND APPLIED PHYSICS

SIMULATION OF A DIGITAL DETECTION SYSTEM USING A DIGITALLY CONTROLLED ANALOG COMPUTER. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUL 69 52P PANDISCIO,A. A. ;TUFTS,D. W. ;
REPT. NO. TR-593
CONTRACT: N00014-67-A-0298-0006
PROJ: NR-372-012

UNCLASSIFIED REPORT

DESCRIPTORS: (*DEMODULATORS, DIGITAL SYSTEMS), SIMULATORS, ANALOG COMPUTERS, COMPUTER LOGIC, SIGNALS, DETECTION, SAMPLING, INFORMATION THEORY, SIGNAL-TO-NOISE RATIO, PROBABILITY, CORRELATORS, MAN MACHINE SYSTEMS (U)
IDENTIFIERS: COMPUTERIZED SIMULATION (U)

THE USEFULNESS OF A DIGITALLY CONTROLLED ANALOG COMPUTER IN STUDYING DIGITAL DETECTION SYSTEMS WAS EXAMINED. A PROGRAM WAS DEVELOPED FOR A COMPUTER EQUIPPED WITH PARALLEL LOGIC ELEMENTS. EXPERIENCE WITH THE SYSTEM SHOWS IT TO BE A VERY USEFUL TOOL FOR SUCH STUDIES PARTICULARLY BECAUSE OF THE EXCELLENT MAN MACHINE INTERACTION AND ALSO BECAUSE OF A POSSIBLE COST ADVANTAGE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 701 026 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

COMPATIBILITY OF DIGITAL COMPUTERS IN A PARTICULAR COMPUTING COMPLEX, (U)

SEP 69 11P ZULFUGARZADE,E. E. ;MAIOROV, F. V. ;

REPT. NO. FTD-HT-23-552-68
PROJ: FTD-7230182

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF AKADEMIYA NAUK AZERBAIDZHANSKOI SSR, BAKU. IZVESTIYA. SERIYA FIZIKO-TEKHNICHESKIKH I MATEMATICHESKIKH NAUK, N2 P71-75 1966, BY M. OLAECHEA.

DESCRIPTORS: (*DATA PROCESSING, DIGITAL COMPUTERS), (*DIGITAL COMPUTERS, COMPATIBILITY), COMPUTER PROGRAMMING, DIGITAL SYSTEMS, INPUT OUTPUT DEVICES, COMPILERS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

THE MACHINE COMPATIBILITY CONSIDERED INCLUDES UNIFORM PROGRAMMING, EASY RECODING OF ONE MACHINE PROGRAM INTO THE LANGUAGES OF THE OTHER MACHINES OF THE COMPLEX, THE SELECTION OF REGISTERS OF THE VARIOUS MACHINES AND THE RECODING OF WORDS IN ONE FORMAT INTO WORDS OF ANOTHER FORMAT, AND THE MANAGEMENT AND EXCHANGE OF INFORMATION BETWEEN THE MACHINES IN THE COMPLEX. PROBLEMS INVOLVED DEPEND LARGELY ON THE CYCLING SPEEDS OF THE ARITHMETIC UNITS, OPERATIONAL MEMORIES, INPUT-OUTPUT UNITS, THE STRUCTURES OF THE FUNCTIONAL ALGORITHMS, AND SYSTEM CONFIGURATIONS IN THE LIGHT OF MACHINE COMPATIBILITY. THE COMPLEX STUDIED CONSISTS OF DIGITAL COMPUTERS AND DIGITAL-INCREMENTAL MACHINES. THE ORGANIZATION OF THE VARIOUS PARTS OF THE SYSTEM TO SOLVE VARIOUS PROBLEMS IS CONSIDERED IN DETAIL. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 702 941 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

QUESTIONS OF THE DEVELOPMENT AND INVESTIGATION OF A DIGITAL COMPLEX BASED ON THE 'URAL-2' AND MN-14 COMPUTERS, (U)

DEC 69 11P KIRPICHNIKOV,V. M. ;KOVALEV, V. V. ;MIKHAILOVSKII,G. M.;RUDENKO,A. P. ;

REPT. NO. FTD-MT-24-400-69
PROJ: FTD-6050205

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO. SREDSTVA ANALOGOVOI I ANALOGO-TSIFROVOI VYCHISLITELNOI TEKHNIKI (ANALOG AND ANALOG-DIGITAL COMPUTER TECHNOLOGY), MOSCOW, 1968 P210-214.

DESCRIPTORS: (*ANALOG-DIGITAL COMPUTERS, DESIGN), OPERATION, ANALOG-TO-DIGITAL CONVERTERS, DIGITAL TO ANALOG CONVERTERS, MATHEMATICAL MODELS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

A HYBRID COMPUTER COMPLEX BASED ON A URAL-2 DIGITAL COMPUTER AND AN MN-14 ANALOG COMPUTER IS DESCRIBED. AMONG THE TASKS ANTICIPATED FOR THE COMPLEX ARE: MODELING OF A CONTROL COMPUTER AND ITS CONTROLLED OBJECT, STUDY OF DYNAMIC PROBLEMS IN AUTOMATIC CONTROL, SYNTHESIS OF AUTOMATIC CONTROL SYSTEMS, AND SOLUTION OF NONLINEAR PROBLEMS BY A PIECEWISE-LINEAR APPROXIMATION METHOD. THE TWO COMPUTERS ARE CONNECTED BY A UNIVERSAL JUNCTION UNIT WHOSE MAIN FUNCTION IS ANALOG-DIGITAL AND DIGITAL-ANALOG CONVERSION. THE JUNCTION UNIT IS CONSTRUCTED IN THE 14-SECTION FORM ALSO USED BY THE URAL-2. THE CODE CONVERSION UNIT IS DISCUSSED AT LENGTH; OPTIMIZATION OF IT HAS RAISED ITS CLOCK FREQUENCY TO 400 KHZ. THE URAL-2 WAS USED TO DETERMINE OPTIMUM PARAMETERS FOR THE CONVERSION UNIT. AN ANALYSIS OF ERRORS IN THE CODE CONVERTER IS MADE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 703 374 9/4
MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS

SOME ALGEBRAIC AND DISTANCE PROPERTIES OF CONVOLUTIONAL CODES, (U)

69 21P MASSEY,JAMES L. ;
CONTRACT: DA-28-043-AMC-02536(E), NGR-15-004-026

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN PROCEEDINGS SYMPOSIUM ON ERROR CORRECTING CODES, U. S. ARMY RESEARCH CENTER, WISCONSIN UNIV., MADISON. 6-8 MAY 68, P89-109.

DESCRIPTORS: (*CODING, DIGITAL SYSTEMS), SHIFT REGISTERS, FEEDBACK, MATRICES(MATHEMATICS), INEQUALITIES, DECODING, THEOREMS (U)
IDENTIFIERS: BINARY CODES, *CONVOLUTIONAL CODES, ERROR CORRECTION CODES (U)

A PLOTKIN-TYPE UPPER BOUND AND A GILBERT-TYPE LOWER BOUND ARE PROVED FOR THE FEEDBACK-DECODING AND DEFINITE-DECODING MINIMUM DISTANCES RESPECTIVELY OF BINARY CONVOLUTIONAL CODES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 704 094 4/1 9/2
PENNSYLVANIA STATE UNIV UNIVERSITY PARK IONOSPHERE RESEARCH LAB

AN INVESTIGATION INTO THE FEASIBILITY OF PROCESSING WAVE INTERACTION DATA IN DIGITAL FORM, (U)

MAR 70 68P CROSKEY,C. L. ;
REPT. NO. SCIENTIFIC-351
CONTRACT: NONR-656(35), NSF-GA-1456

UNCLASSIFIED REPORT

DESCRIPTORS: (•IONOSPHERE, ELECTRON DENSITY), (•ATMOSPHERIC SOUNDING, DATA PROCESSING), DIGITAL SYSTEMS, ELECTRIC FILTERS, FEASIBILITY STUDIES (U)
IDENTIFIERS: SIGNAL PROCESSING, D REGION, DIGITAL FILTERS (U)

THE WAVE INTERACTION EXPERIMENT AT THE IONOSPHERE RESEARCH LABORATORY PRESENTLY OPERATES IN ANALOG FORM. TUNED FILTERS AND COHERENT DETECTION ARE USED TO OBTAIN THE DELTA AMPLITUDE OF RETURNED RADIO PULSES WHICH HAVE BEEN DISTURBED BY WAVE INTERACTION IN THE IONOSPHERE. AS INVESTIGATION WAS CONDUCTED CONCERNING THE FEASIBILITY OF PROCESSING THE WAVE INTERACTION DATA IN DIGITAL FORM. VARIOUS RELATED INSTRUMENTATION SCHEMES ARE BRIEFLY CONSIDERED. A SYSTEM IS PROPOSED WHICH OBTAINS A DIGITAL NUMBER PROPORTIONAL TO THE AVERAGE VALUE OF EACH RETURNED RADIO PULSE. THIS DATA IS CONVEYED TO A DIGITAL COMPUTER OR ARITHMETIC PROCESSOR. SPECIAL COMPUTER PROGRAMS CALLED DIGITAL FILTERS CAN THEN BE USED TO ANALYZE THE DATA. A SIMPLE DIGITAL FILTER SYSTEM IS DISCUSSED. A GUARD SECTION REMOVES THE STRONG DC COMPONENT, THEN THE DIGITAL EQUIVALENT OF COHERENT DETECTION IS PERFORMED. A LOWPASS OUTPUT FILTER PROVIDES MOST OF THE S/N IMPROVEMENT. A PROTOTYPE IS DESCRIBED WHICH WAS BUILT TO FORMALIZE SOME OF THE IDEAS ABOUT SUCH A SYSTEM.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 704 852 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

A METHOD OF CODING THE STATES OF FINITE AUTOMATA FROM THE POINT OF VIEW OF MINIMIZING EQUIPMENT EXPENDITURES, (U)

MAR 70 17P RABINOVICH,Z. L. ; KAPITONOVA,YU. V. ;KOMUKHAEV,E. I. ;
REPT. NO. FTD-MT-24-08-70
PROJ: FTD-6050202
TASK: DIA-T68-05-02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO. TEORIYA DISKRETNYKH AVTOMATOV (THE THEORY OF DIGITAL AUTOMATA), N.P. 1967 P33-40, BY EDWIN P. PENTECOST.

DESCRIPTORS: (•DIGITAL COMPUTERS, CONTROL SYSTEMS), (•COMPUTER LOGIC, AUTOMATA), DIGITAL SYSTEMS, RELAXATION OSCILLATORS, CODING, USSR (U)
IDENTIFIERS: •AUTOMATA, FINITE STATE MACHINES, TRANSLATIONS (U)

A METHOD IS PROPOSED FOR CODING THE STATES OF FINITE AUTOMATA TO MINIMIZE THE EQUIPMENT NECESSARY FOR REALIZATION. THE PROBLEM ARISES IN THE SYNTHESIS OF CONTROL AUTOMATA THAT MUST POSSESS MEANS FOR DECODING EACH STATE DURING FORMATION OF THE OUTPUT CONTROL SIGNALS. THE METHOD CONSISTS IN REPRESENTING THE AUTOMATON AS A COMPOSITION OF THE SIMPLEST PARTIAL AUTOMATA. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 706 023 14/2
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A DIGITAL TACHOMETER/ACCELEROMETER. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
DEC 69 47P BARTOL,JOHN HONE , JR;

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHAFTS(MACHINE ELEMENTS), *TACHOMETERS), (*ACCELEROMETERS, SHAFTS(MACHINE ELEMENTS)), DIGITAL SYSTEMS, SHIFT REGISTERS, COMPUTER PROGRAMS, THESES (U)

ANALOG METHODS FOR MEASURING ROTATIONAL SHAFT VELOCITY AND ACCELERATION ARE WELL DEVELOPED, YET PRESENT MANY DRAWBACKS IN PRACTICAL USE. A DEVICE IS PROPOSED TO DIGITALLY COMPUTE ESTIMATES OF THE INSTANTANEOUS VELOCITY AND ACCELERATION OF A SHAFT. THE METHOD OF ATTACK USED IN ARRIVING AT A FINAL DESIGN PROCEEDS FROM DEVELOPMENT OF SIGNAL GENERATING EQUIPMENT THROUGH VELOCITY- AND ACCELERATION-PROCESSING CIRCUITRY. COMPUTER SIMULATION IS USED TO OPTIMIZE THE ELECTRONIC CIRCUITRY TO ACHIEVE THE BEST ACCURACY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 707 296 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

COORDINATION BETWEEN THE UP-1 CONVERTER AND THE COMPUTER ELECTRONIC 'DNIEPER' OPERATING JOINTLY IN AN ANALOG-DIGITAL COMPUTER COMPLEX, (U)

MAR 70 15P VENTDEL,M. D. ;VORONOV,I. S. ;FILOSOFOV,V. K. ;CHEKHONADSKII,N. A. ; CHICKIN,V. A. ;

REPT. NO. FTD-MT-24-48-70
PROJ: FTD-6050205
TASK: DIA-T68-05-02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF SEMINAR UPRAVLYAYUSHCHIE MASHINY I SISTEMY. TRUDY (USSR) NI P29-37 1968, BY CHARLES T. OSTERTAG.

DESCRIPTORS: (*DIGITAL TO ANALOG CONVERTERS, INTERFACES), DIGITAL COMPUTERS, AMPLIFIERS, CIRCUITS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

THE UP-1 DIGITAL-ANALOG CONVERTER IS INTENDED FOR COORDINATING THE OPERATION OF THE M-20 DIGITAL COMPUTER WITH VARIOUS ANALOG COMPUTERS. SUBSTITUTION OF THE DNEPR-1 COMPUTER FOR THE M-20 INVOLVED SOLUTION OF THE FOLLOWING PROBLEMS: (1) AS THE DNEPR-1 DELIVERS NEGATIVE 7-V PULSES WHILE THE UP-1 REQUIRES POSITIVE 40-50-V PULSES, SOME CIRCUITS AND ASSEMBLIES IN THE UP-1 WERE ALTERED; (2) SPECIAL INSTRUCTIONS WERE WORKED OUT FOR FEEDING DIGITAL INFORMATION INTO THE UP-1 AND FOR TAKING IT OUT; A SIMULTANEOUS EXCHANGE OF INFORMATION WOULD REQUIRE 45 BINARY DIGITS; ONLY 26 DIGITS WERE AVAILABLE IN THE DNEPR-1; 3) DEFINITELY SPACE PULSES ARE REQUIRED FOR ACCESS TO THE UP-1; HENCE, SUCH PULSES HAD TO BE DESIGNATED FROM THOSE AVAILABLE IN THE DNEPR-1. CHANGES IN SCHEMATICS ARE SHOWN. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 707 500 20/9 9/5 20/12
STANFORD UNIV CALIF STANFORD ELECTRONICS LABS

QUARTERLY STATUS REPORT NO. 117, 1 JANUARY THROUGH 31 MARCH 1970. (U)

MAR 70 107P
REPT. NO. SU-SEL-70-011
CONTRACT: N00014-67-A-0112-0044

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO QUARTERLY STATUS REPT. NO. 116, AD-702 066.

DESCRIPTORS: (*PLASMAS(PHYSICS), *REVIEWS), (*INTEGRATED CIRCUITS, *REVIEWS), (*SOLID STATE PHYSICS, *REVIEWS), (*DIGITAL COMPUTERS, *REVIEWS), LASERS, SEMICONDUCTORS, ELECTROOPTICS, DATA TRANSMISSION SYSTEMS, INFORMATION THEORY, COMMUNICATION SYSTEMS, COMMUNICATION AND RADIO SYSTEMS, VAN ALLEN RADIATION BELT, DIGITAL SYSTEMS, PATTERN RECOGNITION (U)
IDENTIFIERS: QUANTUM ELECTRONICS (U)

CONTENTS: PLASMA PHYSICS AND QUANTUM ELECTRONICS; RADIOSCIENCE; SOLID-STATE ELECTRONICS; INFORMATION SYSTEMS; DIGITAL SYSTEMS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 707 509 4/2 14/5
SINGER-GENERAL PRECISION INC SUNNYVALE CALIF LINK DIV

IMAGE TRANSFORMATIONS OF SATELLITE CLOUD PHOTOGRAPHY. (U)

DESCRIPTIVE NOTE: FINAL REPT. 2 MAY 68-1 APR 70, APR 70 93P PETERS,ROBERT L. ;
CONTRACT: F19628-68-C-0283
PROJ: AF-6698
TASK: 669801
MONITOR: AFCRL 70-0221

UNCLASSIFIED REPORT

DESCRIPTORS: (*CLOUDS, AERIAL PHOTOGRAPHS), (*AERIAL PHOTOGRAPHY, DATA PROCESSING), (*PHOTOGRAPHIC IMAGES, SCANNING), COMPUTER PROGRAMMING, SCIENTIFIC SATELLITES, RESOLUTION, PHOTOGRAPHY, DIGITAL SYSTEMS, LIGHT TRANSMISSION, REPRODUCTION, MANNED SPACECRAFT, SAMPLING, MOTION, PHOTOGRAPHIC TONE, CIRRUS CLOUDS, CUMULUS CLOUDS, CUMULONIMBUS CLOUDS (U)
IDENTIFIERS: LUMINANCE, *SPACEBORNE PHOTOGRAPHY, GEMINI (U)

THE REPORT DESCRIBES A STUDY PROGRAM WHICH WAS CONCERNED WITH THE INVESTIGATION OF PHOTOGRAPHIC IMAGE TRANSFORMATIONS. SAMPLES OF CLOUD PHOTOGRAPHS WERE DIGITIZED USING A PROGRAMMABLE LIGHT SOURCE (A COMPUTER CONTROLLED CRT SCANNER). THE DIGITIZED DATA WERE THEN PROCESSED IN VARIOUS WAYS AND SUBSEQUENTLY APPLIED TO THE CRT SCANNER SYSTEM TO GENERATE MUTATED PHOTOGRAPHIC IMAGES. THE PURPOSE OF THE TRANSFORMATIONS WAS TO INVESTIGATE EFFECTS AND LIMITS OF: (1) VARIATION OF LUMINANCE LEVELS, IN BOTH LINEAR AND NON-LINEAR FASHION, AND (2) VARYING IMAGE RESOLUTION. FIFTY-SEVEN (57) OF THE RECREATED PHOTOGRAPHIC PRINTS WERE SELECTED AS THOSE IMAGES WHICH BEST DEMONSTRATED THE RESULTS AND GOALS OF THIS STUDY. THESE PRINTS, ALONG WITH THE ASSOCIATED PERTINENT TRANSFORMATION DATA ARE INCLUDED AS PART OF THIS REPORT. THIS DOCUMENT IS SUPPLIED IN LOOSE-LEAF BINDER FORM SUCH THAT THE PHOTOGRAPHS MAY BE READILY REMOVED TO FACILITATE EVALUATION, COMPARISON, AND/OR REORGANIZATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 708 725 9/2 5/7
SYRACUSE UNIV N Y

LARGE SCALE INFORMATION PROCESSING SYSTEMS. VOLUME I. INVESTIGATIONS IN NATURAL LANGUAGES. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 15 JUL 67-15 JAN 70,
MAY 70 147P PETERSON,P. L. ;CARNES,R. D. ;REID,I. R. ;O'CONNELL,E. J. ;
CONTRACT: F30602-68-C-0013
PROJ: AF-5581
TASK: 558102
MONITOR: RADC TR-70-80-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-708 726.

DESCRIPTORS: (*DATA PROCESSING, DIGITAL SYSTEMS), DESIGN, SEMANTICS, COMPUTATIONAL LINGUISTICS, LANGUAGE, SYNTAX (U)
IDENTIFIERS: NATURAL LANGUAGE (U)

THE REPORT CONSISTS OF FIVE VOLUMES CONTAINING SEVERAL REPORTS FROM A NUMBER OF ACADEMIC AND RESEARCH STAFFS INVESTIGATING NEW APPROACHES OR NEW METHODS IN THE DESIGN OR UTILIZATION OF INFORMATION PROCESSING SYSTEMS, WITH PARTICULAR EMPHASIS ON LARGE SCALE DIGITAL SYSTEMS. THE INVESTIGATIONS WERE CONCERNED WITH FOUR MAIN AREAS OF INTEREST. THE FIRST IS IN METHODS FOR THE IMPROVEMENT OF SYSTEM EFFECTIVENESS AND FOR EXTENDING THE RANGE OF APPLICATIONS OF LARGE SCALE SYSTEMS, WITH PARTICULAR EMPHASIS ON ON-LINE, TIME-SHARED TECHNIQUES FOR USER-ORIENTED SYSTEMS. THE SECOND WAS INVESTIGATION INTO THE APPLICATION OF LARGE SCALE INFORMATION SYSTEMS TO PROBLEMS IN DIVERSE AREAS. PRIMARY EMPHASIS WAS ON PROBLEMS REQUIRING NON-NUMERIC TECHNIQUES. THIRD WAS INVESTIGATION INTO MEASURES OF EFFICIENCY, COST-EFFECTIVENESS, AND USER REACTION TO VARIOUS TYPES OF SYSTEMS, WITH EMPHASIS ON SYSTEM AND USER ADAPTABILITY. FOURTH WAS INVESTIGATIONS IN THE FUNDAMENTAL THEORETICAL STRUCTURE OF LARGE SCALE SYSTEMS, ITS COMPONENT ELEMENTS, AND RELATED AREAS OF TECHNOLOGY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 708 726 9/2
SYRACUSE UNIV N Y

LARGE SCALE INFORMATION PROCESSING SYSTEMS.
VOLUME II. INVESTIGATIONS IN DATA MANAGEMENT. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 15 JUL 67-15 JAN 70,
MAY 70 74P ATHERTON,P ;MILLER,K. ;
AURRICHIO,D. ;SCHWARZLANDER,H. ;
CONTRACT: F30602-68-C-0013
PROJ: AF-5581
TASK: 558102
MONITOR: RADC TR-70-80-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-708 725 AND VOLUME 3, AD-708 727.

DESCRIPTORS: (*DATA PROCESSING, DIGITAL SYSTEMS), INFORMATION RETRIEVAL, DATA STORAGE SYSTEMS, SEARCH THEORY (U)
IDENTIFIERS: *DATA MANAGEMENT (U)

CONTENTS: LC/MARC ON MOLDS--AN EXPERIMENT IN COMPUTER-BASED, INTERACTIVE BIBLIOGRAPHIC STORAGE, SEARCH, RETRIEVAL, AND PROCESSING; SURPARS--AN ON-LINE DATA SYSTEM; INFORMATION RETRIEVAL PROJECT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 708 727 9/2
SYRACUSE UNIV N Y

LARGE SCALE INFORMATION PROCESSING SYSTEMS. VOLUME III. INVESTIGATIONS IN COMPUTER LANGUAGES. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 15 JUL 67-15 JAN 70,
MAY 70 145P FOSTER,G. ;STABLER,E. ; OFFEK,H. ;ROSSMANN,G. ;
CONTRACT: F30602-68-C-0013
PROJ: AF-5581
TASK: 558102
MONITOR: RADC TR-70-80-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-708 726, AND VOLUME 4, AD-708 728.

DESCRIPTORS: (*DATA PROCESSING, DIGITAL SYSTEMS), (*PROGRAMMING LANGUAGES, SCIENTIFIC RESEARCH), TRANSFORMATIONS (U)

CONTENTS: A PROGRAMMING LANGUAGE--MANIPULATION OF DATA STRUCTURES AND SOME PROPOSED EXTENSIONS; SYSTEM DESCRIPTION LANGUAGES; MICROPROGRAM TRANSFORMATIONS; GRAPH DESCRIPTION LANGUAGE; PROGRAM SCHEMATA AND MICROPROGRAM TRANSFORMATION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 708 728 9/2
SYRACUSE UNIV N Y

LARGE SCALE INFORMATION PROCESSING SYSTEMS.
VOLUME IV. SPECIAL INVESTIGATIONS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 15 JUL 67-15 JAN 70,
MAY 70 141P LEPAGE,W. ;PRATHER,R. ;
SARGENT,R. ;WEINER,D. ;FISHELL,K. ;
CONTRACT: F30602-68-C-0013
PROJ: AF-5581
TASK: 558102
MONITOR: RADC TR-70-80-VOL-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-708 727 AND VOLUME 5, AD-708 729.

DESCRIPTORS: (*DATA PROCESSING, DIGITAL SYSTEMS), PROGRAMMED INSTRUCTION, AUTOMATA, INVENTORY, MOTION PICTURES, ALGEBRAS, COMPUTER LOGIC (U)
IDENTIFIERS: BOOLEAN ALGEBRA, CAI(COMPUTER AIDED INSTRUCTION), *COMPUTER AIDED INSTRUCTION, COMPUTER GENERATED MOTION PICTURES, COMPUTER ANIMATION (U)

CONTENTS: COMPUTER AIDED INSTRUCTION; A CATEGORICAL VERIFICATION OF AUTOMATA THEORY; COMPUTER AIDED DESIGN OF INVENTORY SYSTEMS; COMPUTER GENERATED FILMS; INSTRUCTIONAL APPLICATIONS; A NOTE ON THE SOLUTION OF SEQUENTIAL BOOLEAN EQUATIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 708 729 9/2
SYRACUSE UNIV N Y

LARGE SCALE INFORMATION PROCESSING SYSTEMS.
VOLUME V. STUDY OF ASSOCIATIVE MEMORY
SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 15 JUL 67-15
JAN 70,
MAY 70 335P FENG,T. ;
CONTRACT: F30602-68-C-0013
PROJ: AF-5581
TASK: 558102
MONITOR: RADC TR-70-80-VOL-5

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 4, AD-708 728.

DESCRIPTORS: (*DATA PROCESSING, DIGITAL SYSTEMS), DATA
STORAGE SYSTEMS, SEARCH THEORY, INFORMATION RETRIEVAL,
COMPUTER LOGIC (U)
IDENTIFIERS: *ASSOCIATIVE STORAGE (U)

CONTENTS: ASSOCIATIVE MEMORY SYSTEM
MANIPULATIONS; ASSOCIATIVE MEMORY SYSTEM
ORGANIZATIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 708 858 13/6
WATERVLIET ARSENAL N Y

REQUIREMENTS FOR DIGITAL CONTROL OF ELECTROPLATING PROCESS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 70 24P PYM,JOHN W. ;SHEN,CHI-
NENG ;
REPT. NO. WVT-7023
PROJ: DA-1-T-061101-A-91-A

UNCLASSIFIED REPORT

DESCRIPTORS: (•ELECTRODEPOSITION, COMPUTER PROGRAMMING), DIGITAL SYSTEMS, ELECTROPLATING, PH FACTOR, ELECTROPLATING SOLUTIONS, ANALOG-TO-DIGITAL CONVERTERS, DIGITAL COMPUTERS, COMPUTER LOGIC (U)
IDENTIFIERS: COMPUTER ANALYSIS (U)

VARIOUS MODES OF CONTROL FOR AN ELECTROPLATING PROCESS ARE DISCUSSED. THE ADVANTAGES OF A DIGITAL SYSTEM FOR SUCH CONTROL ARE PRESENTED AND COMPARED TO AN ANALOG SYSTEM. THE EQUIPMENT NECESSARY TO IMPLEMENT THE DIGITAL CONTROL SYSTEM IS SPECIFIED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 709 910 9/2 9/5
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

DETERMINING PARTITION ELEMENTS WITH FEEDBACK CONSTRAINTS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
JUN 70 76P BRECKON,THOMAS JOSEPH ;

UNCLASSIFIED REPORT

DESCRIPTORS: (•DIGITAL COMPUTERS, DESIGN), (•LOGIC CIRCUITS, DESIGN), (•GATES(CIRCUITS), DESIGN), DIGITAL SYSTEMS, COMPUTER PROGRAMS, GRAPHICS, FEEDBACK, ALGORITHMS, THESES (U)
IDENTIFIERS: NETWORK SYNTHESIS, BIPARTITE GRAPHS, GRAPHS (U)

THE PARTITION PROBLEM IS THAT STEP IN THE LAYOUT PROBLEM IN WHICH IT MUST BE DECIDED WHICH OF THE ELEMENTARY DIGITAL CIRCUITS ARE TO BE COALESCED INTO A SINGLE, ELECTRONIC PACKAGE. A SOLUTION OF THE PARTITION PROBLEM MUST SATISFY CONSTRAINTS ON THE MAXIMUM NUMBER OF ELEMENTARY CIRCUITS THAT CAN BE PUT INTO A SINGLE PACKAGE, AND ON THE NUMBER OF EXTERNAL CONNECTIONS THAT CAN BE ATTACHED TO THE PACKAGE. A SOLUTION DUE TO LAWLER ET AL, WHICH MINIMIZES DELAY CAUSED BY CLUSTERING ELECTRONIC ELEMENTS, IS EXTENDED TO CYCLIC NETWORKS. A NEW ALGORITHM TO EXTRACT FROM A GRAPH THE MAXIMAL STRONGLY-CONNECTED SUBGRAPHS (LOBES) IS DEVELOPED, AND A NEW APPROACH TO CLUSTERING THE DIGITAL ELEMENTS OF A LOBE IS PRESENTED. THE DIGITAL CIRCUIT IS REPRESENTED BY A BIPARTITE GRAPH, AND SOLUTIONS ARE EXPRESSED IN TERMS OF GRAPH THEORY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 710 256 4/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

HYBRID STORAGE AND INTERPOLATING DEVICES FOR A DIGITAL COMPUTER, (U)

JUN 70 19P GINZBURG,S. A. ;LYUBARSKII, YU. A. ;

REPT. NO. FTD-HC-23-117-70
PROJ: FTD-6050205
TASK: DIA-T68-05-02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF VSESOYUZNOE SOVESHCHANIE PO AVTOMATICHESKOMU UPRAVLENIYU (TEKHNICHESKOI KIBERNETIKI) (3RD) ODESSA, 1965. MNOGOSVYAZNYE I INVARYANTNYE SISTEMY. NELINEINYE I DISKRETNYE SISTEMY. TRUDY, (ALL-UNION CONFERENCE ON AUTOMATIC CONTROL (TECHNICAL CYBERNETICS) (3RD) ODESSA, 1965. MULTILOOP AND INVARIANT SYSTEMS. NONLINEAR AND DISCRETE SYSTEMS. TRANSACTIONS), MOSCOW, 1968 P525-534.

DESCRIPTORS: (*DIGITAL COMPUTERS, *DATA STORAGE SYSTEMS), ANALOG SYSTEMS, DIGITAL SYSTEMS, ERRORS, INTERPOLATION, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

SPECIAL ANALOG-DIGITAL DEVICES FOR STORING AND INTERPOLATING FUNCTIONS IN A DIGITAL COMPUTER ARE CONSIDERED. NODES IN AN (N PLUS 1)-DIMENSIONAL SPACE CAN HAVE EITHER AN ORDERLY OR AN ARBITRARY ARRANGEMENT. AS FUNCTION VALUES ARE SPECIFIED AT THE NODES, THE GENERALIZED LAGRANGE INTERPOLATION POLYNOMIAL IS USED; IT ENSURES SMALLER EQUIPMENT AND HIGHER SPEED THAN THE NEWTON INTERPOLATION FORMULA. THREE SCHEMES ARE BRIEFLY CONSIDERED: (1) DIGITAL STORAGE, ANALOG INTERPOLATION; (2) ANALOG STORAGE, DIGITAL INTERPOLATION; (3) DIGITAL STORAGE, HYBRID INTERPOLATION. COMPARISON SHOWS THAT THE FIRST SCHEME IS THE SIMPLEST; ERROR LARGELY DETERMINED BY ITS ANALOG PART IS 1-0.1 PERCENT; THE THIRD SCHEME HAS THE HIGHEST ACCURACY; COMPLEXITY OF ITS DIGITAL PART SHARPLY INCREASES WITH THE NUMBER OF INDEPENDENT VARIABLES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 710 368 9/5
NAVAL RESEARCH LAB WASHINGTON D C

THE NRL MICROWAVE SPACE RESEARCH FACILITY OPERATING PROCEDURES OF THE COMPUTER CONTROL SYSTEM FOR THE 60-FT X-BAND ANTENNA. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUN 70 69P BASS,C. A. ;TOWNSEND,D.
H. ;
REPT. NO. NRL-7110
PROJ: XF48-222-001

UNCLASSIFIED REPORT

DESCRIPTORS: (*PARABOLIC ANTENNAS, CONTROL SYSTEMS), COMPUTERS, DIGITAL SYSTEMS, REAL TIME, OPERATION, X BAND, TRACKING, NAVAL RESEARCH LABORATORIES, MARYLAND, MICROWAVE EQUIPMENT (U)

IN ITS PRIMARY MODE OF OPERATION THE 60-FT X-BAND ANTENNA AT NRL'S MICROWAVE SPACE RESEARCH FACILITY IS POSITIONED BY MEANS OF A DIGITAL CONTROL SYSTEM, THE NAVY ANTENNA COMPUTER TRACKING AND COMMAND (NACTAC) SYSTEM. BOTH HARDWARE DESIGN AND SOFTWARE PROGRAMMING OF THE NACTAC SYSTEM ARE OPERATOR ORIENTED WITH RESPECT TO THE MANNER IN WHICH REQUIREMENTS ARE DEFINED AND CONTROL IS EXERCISED. SYSTEM OPERATING PROCEDURES ARE DESCRIBED IN DETAIL. THEY INCLUDE COMPUTER STARTUP, LOADING OF THE NACTAC SYSTEM PROGRAM, COMPUTER-OPERATOR DIALOGUES FOR ENTERING NACTAC SOURCE DATA, OPERATOR-DESIGNATED SELECTIONS AVAILABLE FROM THE MAIN CONTROL CONSOLE, NACTAC DIAGNOSTICS, DATA CARD FORMATS, AND COMPUTER SHUTDOWN PROCEDURES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 710 381 9/5 9/4
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A STUDY OF DIGITAL FILTERS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
DEC 69 130P WALSH,PHILIP JOSEPH ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*ELECTRIC FILTERS, MATHEMATICAL MODELS), (*INFORMATION THEORY, DIGITAL SYSTEMS), LOW PASS FILTERS, BAND PASS FILTERS, DIFFERENCE EQUATIONS, INTEGRAL TRANSFORMS, COMPUTERS, COMPUTER PROGRAMS, REAL TIME, SIMULATION, THESES (U)
IDENTIFIERS: LAPLACE TRANSFORMATION, FREQUENCY RESPONSE, COMPUTERIZED SIMULATION, *DIGITAL FILTERS (U)

THE THESIS DISCUSSES THE SUBJECT OF DIGITAL FILTERS IN TWO PARTS. FIRST THE ANALYTICAL TOOLS AND SYNTHESIS TECHNIQUES WHICH ARE USED FOR DIGITAL SIGNAL PROCESSORS ARE EXPLAINED AND ILLUSTRATED WITH EXAMPLES. EMPHASIS IS PLACED ON (1) THE GENERATION AND USE OF THE DIGITAL TRANSFER FUNCTION, (2) DESIGN PROCEDURES IN THE FREQUENCY DOMAIN USING METHODS OF CONTINUOUS-FILTER DESIGN AS INTERMEDIATE STEPS, AND (3) REAL-TIME DIGITAL-FILTER IMPLEMENTATION SCHEMES. IN THE SECOND PART OF THE THESIS A MACHINE-LANGUAGE COMPUTER PROGRAM IS PRESENTED FOR THE REAL-TIME SIMULATION OF DIGITAL FILTERS ON A HYBRID COMPUTER. THE PROGRAM IS DESCRIBED IN DETAIL AND EXPERIMENTAL RESULTS FOR SEVERAL FILTER DESIGNS AND REALIZATION SCHEMES ARE REPORTED. IT IS BELIEVED THAT SUCH A COMPUTER PROGRAM, WITH ITS INHERENT ABILITY TO ACCURATELY SIMULATE A SPECIAL-PURPOSE COMPUTER AND TO PROVIDE EXTERNAL CONTROL OF WORD LENGTH AND CLOCK FREQUENCY, COULD BE USED TO EXPERIMENTALLY DETERMINE SPECIFICATIONS FOR THE LSI IMPLEMENTATION OF DIGITAL FILTERS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 710 946 17/2 20/5
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

AN INFORMATION FEEDBACK APPROACH APPLIED TO AN AMPLITUDE-MODULATED DIGITAL LASER COMMUNICATIONS SYSTEM. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
MAR 70 97P DWORKIN,LARRY U. ;
REPT. NO. ECOM-3256
PROJ: DA-5B161B443D01

UNCLASSIFIED REPORT

DESCRIPTORS: (*OPTICAL COMMUNICATIONS, FEEDBACK), DIGITAL SYSTEMS, DIGITAL COMPUTERS, AMPLITUDE MODULATION, INFORMATION THEORY, MONTE CARLO METHOD, LASERS, PHOTONS, COUNT RATE METERS, ATTENUATION (U)
IDENTIFIERS: *LASER COMMUNICATION SYSTEMS (U)

THE USE OF PREDECISION FEEDBACK IN A LASER COMMUNICATION SYSTEM EMPLOYING AN AMPLITUDE-MODULATED LASER TRANSMITTER AND PHOTOMULTIPLIER RECEIVER IS CONSIDERED. POISSON STATISTICS ARE USED TO DESCRIBE THE DISTRIBUTION OF EMITTED PHOTO ELECTRONS IN A FIXED TIME INTERVAL FROM THE PHOTO EMISSIVE SURFACE OF THE RECEIVER WHEN THE INCIDENT FIELD IS A MIXTURE OF A SINGLE MODE LASER AND BROADBAND THERMAL NOISE. THE USE OF A NOISELESS FEEDBACK PATH TO REDUCE THE VARIANCE OF THE RECEIVED PHOTO ELECTRON COUNT IS EXAMINED. A TECHNIQUE KNOWN AS 'FEEDBACK AVERAGING' IS CONCEIVED AND THE FOLLOWING PROPERTIES ARE DEMONSTRATED. (A) THE VARIANCE OF THE RECEIVED PHOTO ELECTRON COUNTS IS SIGNIFICANTLY REDUCED OVER THAT OBTAINED IN A SYSTEM WITHOUT FEEDBACK. (B) THE EFFECTS OF BACKGROUND RADIATION AND SHOT NOISE AT THE RECEIVER CAN BE REDUCED. (C) THE EFFECT OF SLOW FADING ON THE MEAN ARRIVAL RATE OF PHOTONS IS REDUCED. THIS IS ACHIEVED IN THE ABOVE SYSTEM WITH THE SAME AVERAGE POWER AND ONLY SLIGHTLY MORE PEAK POWER, IN MOST CASES, THAN THE SAME SYSTEM WITHOUT FEEDBACK. THE APPROACH IS TREATED ANALYTICALLY, AND SIMULATED ON A DIGITAL COMPUTER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 713 955 1774 2075
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

AN INFORMATION FEEDBACK APPROACH APPLIED TO POLARIZATION-MODULATED LASER COMMUNICATION SYSTEMS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUL 70 26P DWORKIN,LARRY U. ;
REPT. NO. ECOM-3314
PROJ: DA-5016118443001, DA-A-71-A-3801

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: DOCTORAL THESIS FROM POLYTECHNIC INST. OF BROOKLYN, N. Y.

DESCRIPTORS: (*OPTICAL COMMUNICATIONS, FEEDBACK), DIGITAL SYSTEMS, DIGITAL COMPUTERS, INFORMATION THEORY, PHOTONS, COUNT RATE METERS, ATTENUATION, LASERS, POLARIZATION, THESES (U)
IDENTIFIERS: *LASER COMMUNICATION SYSTEMS, *MODULATION, *POLARIZATION (U)

THE USE OF AN INFORMATION FEEDBACK PROCEDURE, CALLED 'FEEDBACK AVERAGING' IS APPLIED TO AN M-ARY POLARIZATION MODULATED LASER COMMUNICATION SYSTEM. THE SYSTEMS WITH AND WITHOUT FEEDBACK, THAT ARE LIMITED BY PHOTON FLUCTUATION, ARE CONSIDERED AND COMPARED. A SIGNIFICANT IMPROVEMENT IN ERROR RATE OF A SYSTEM WITH FEEDBACK IS DEMONSTRATED OVER A ONE-WAY SYSTEM FOR A QUATERNARY SYSTEM SUBJECT TO INTENSITY CONSTRAINT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 711 473 9/2 17/7 15/3
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC CITY N J

NAS EN ROUTE STAGE A, MODEL 1B, TEST AND EVALUATION OF THE PRE-PRODUCTION EQUIPMENT AN/FYQ-47. (U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 69-APR 70
SEP 70 56P BURKARD,KARL H. ;
REPT. NO. FAA-NA-70-35
PROJ: FAA-119-225-91X
MONITOR: FAA-NS 70-2

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING, *AIR TRAFFIC CONTROL SYSTEMS), DIGITAL SYSTEMS, INTEGRATED CIRCUITS, POSITION FINDING, RADAR SIGNALS, AIRCRAFT INTERCEPT CONTROL SYSTEMS (U)
IDENTIFIERS: AN/FYQ-47, SAGE (U)

THE AN/FYQ-47 (PRODUCTION COMMON DIGITIZER) (PCD) IS AN INTEGRATED CIRCUIT SIMPLEX MODEL DESIGNED TO DERIVE AIRCRAFT POSITIONAL INFORMATION FROM FAA/USAF PRIMARY AND SECONDARY RADAR AND BEACON INPUTS. BEACON CODE REPLIES FOR MODE 3/A (IDENTIFY), MODE 2 (MILITARY IDENTITY), AND MODE C (ALTITUDE) ARE PROCESSED AND REPORTED IN A DIGITAL MESSAGE WITH ASSOCIATED POSITIONAL INFORMATION. AT JOINT-USE SITES, THE PCD ALSO PERFORMS FUNCTIONS RELATED TO THE USAF SEMI-AUTOMATIC HEIGHT FINDER PROCESS AND HANDLES INFORMATION RECEIVED FROM USAF GAP FILLER RADARS. THE MAJOR NON-MILITARY INPUTS TO THE PCD ARE AS FOLLOWS: RADAR AND BEACON VIDEOS, RADAR AND BEACON PRE-TRIGGERS, AND REFERENCE AND AZIMUTH CHANGE PULSES (ACP'S) GENERATED AT THE RADAR ANTENNA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMO7

AD- 711 816 9/5 20/12 9/2
STANFORD UNIV CALIF STANFORD ELECTRONICS LABS

QUARTERLY STATUS REPORT NO. 118, 1 APRIL THROUGH 30 JUNE 1970. (U)

JUN 70 92P
REPT. NO. SU-SEL-70-031
CONTRACT: N00014-67-A-0112-0044

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO QUARTERLY STATUS REPT. NO. 117, AD-707 500.

DESCRIPTORS: (*PLASMAS(PHYSICS), REVIEWS), (*INTEGRATED CIRCUITS, REVIEWS), (*SOLID STATE PHYSICS, REVIEWS), (*DIGITAL COMPUTERS, REVIEWS), LASERS, ELECTRONICS, INFORMATION THEORY, DIGITAL SYSTEMS, SEMICONDUCTORS, DATA TRANSMISSION SYSTEMS, ELECTROOPTICS, SCATTERING (U)
IDENTIFIERS: QUANTUM ELECTRONICS (U)

CONTENTS: PLASMA PHYSICS AND QUANTUM ELECTRONICS; RADIOSCIENCE; SOLID-STATE ELECTRONICS; INFORMATION SYSTEMS; AND DIGITAL SYSTEMS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 713 669 9/2 20/13
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

ELECTRICAL DIGITAL-ANALOG MODEL EM-10 FOR SOLVING PROBLEMS OF NONSTATIONARY THERMAL CONDUCTIVITY, (U)

AUG 70 6P BUKHMAN,V. E. ;VOLYNSKII, B. A. ;MAKARENKO,N. N. ;
REPT. NO. FTD-MT-24-106-70
PROJ: FTD-6050205
TASK: DIA-T68-05-02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO. RASCHET FIZICHESKIKH POLEI METODAMI MODELIROVANIYA (CALCULATION OF PHYSICAL FIELDS BY METHODS OF MODELING), MOSCOW, 1968 P371-374, BY CHARLES T. OSTERTAG.

DESCRIPTORS: (*ANALOG-DIGITAL COMPUTERS, DESIGN), (*THERMAL CONDUCTIVITY, BOUNDARY VALUE PROBLEMS), HEAT TRANSFER, COMPUTER PROGRAMMING, MEMORY DEVICES, DIGITAL TO ANALOG CONVERTERS, USSR (U)
IDENTIFIERS: BESM 2 COMPUTERS, TRANSLATIONS (U)

AN EM-10 DIGITAL-ANALOG MODEL HAS BEEN DEVELOPED FOR SOLVING NONSTATIONARY PROBLEMS WITH BOUNDARY CONDITIONS OF TYPE 3 - THE CONDITION OF HEAT EXCHANGE WITH THE MEDIUM. THE MEMORY DEVICE IS THE MAGNETIC DRUM FROM A BESM-2 COMPUTER. THIS MEMORY DEVICE CONTROLS THE ENTIRE OPERATION. DIGITAL-ANALOG CONVERTERS ARE USED TO TRANSFORM THE NUMERICAL CODE INTO ANALOG VALUES. THE ARTICLE CONTAINS A BLOCK DIAGRAM OF THE EM-10 LAYOUT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 718 088 9/2 17/2
RAND CORP SANTA MONICA CALIF

MODELING THE VIDEO GRAPHICS SYSTEM:
PROCEDURE AND MODEL DESCRIPTION, (U)

DEC 70 93P BELL,T. E. ;
REPT. NO. R-519-PR
CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING, GRAPHICS), (*TELEVISION DISPLAY SYSTEMS, DESIGN), COMPUTER PROGRAMMING, CODING, DATA STORAGE SYSTEMS, MULTIPLEXING, DIGITAL TO ANALOG CONVERTERS (U)
IDENTIFIERS: COMPUTERS, GRAPHICS, INTERACTIONS, VIDEO GRAPHICS SYSTEM, *COMPUTERS, *GRAPHICS, COMPUTERIZED SIMULATION (U)

THE REPORT PRESENTS BOTH THE PROCESS AND RESULTS OF GENERATING A COMPUTER SYSTEM DESCRIPTION FOR SIMULATION PURPOSES WHILE BOTH HARDWARE AND SOFTWARE ARE UNDER DEVELOPMENT. THE INTERACTIVE MULTITERMINAL VIDEO GRAPHICS SYSTEM ACHIEVES LOW COST BY USING AS TERMINALS MODIFIED TELEVISION SETS WHOSE PICTURES ARE CONTINUOUSLY REFRESHED FROM A VIDEO DISK BY THREE SCAN CONVERTERS DRIVEN BY A SINGLE DIGITAL-TO-ANALOG CONVERTER. AN IBM 1800 PROCESS CONTROLLER RECEIVES GRAPHIC ORDERS FROM USER PROGRAMS IN THE CONNECTED SERVICE MACHINES (IBM 360S) AND SENDS THEM TO THE CONVERTER; IT ALSO HANDLES INPUT FROM TERMINALS. THE DOCUMENTATION HISTORY DETAILS THE ACTIVITIES AND ELAPSED TIME OF EACH PHASE OF THE 57-WEEK EFFORT; IT CAN SERVE AS AN AID IN ESTIMATING THE INVESTMENT REQUIRED FOR SUCH AN UNDERTAKING, AND THE CONCLUSIONS CAN HELP SIMULATORS TO DOCUMENT AND MODEL MORE EFFECTIVELY.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 718 379 9/2
NEW YORK UNIV BRONX SCHOOL OF ENGINEERING AND SCIENCE

COMPUTER ASSEMBLY TESTERS, (U)

FEB 71 112P LAX,HENRY S. ;
CONTRACT: N00039-68-C-3579
PROJ: XF013-17-01, SETE-210-104
TASK: 5599

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERS, *TEST EQUIPMENT), SIGNAL GENERATORS, DISCRIMINATORS, DIGITAL SYSTEMS (U)

AN EXAMINATION OF AVAILABLE TEST EQUIPMENT FOR COMPUTER ASSEMBLIES HAS SHOWN THAT ONE BASIC DEVICE EXISTS WHICH IS COMMON TO ALL SUCH TEST EQUIPMENT. IT IS THE DIGITAL SIGNAL GENERATOR (DSG). THE DSG IS A PROGRAMMABLE PULSE GENERATOR WHOSE PULSE TRAINS ARE USED TO GENERATE THE DIGITAL DATA FOR TESTING ALL KINDS OF COMPUTER ASSEMBLIES. FOR THE PARTICULAR PURPOSE OF TESTING COMPUTER MEMORIES, THE DSG GENERATES VARIABLE DATA PATTERNS AND ADDRESSES THE MEMORY CELLS SEQUENTIALLY, IN A RANDOM MODE, COLLECTIVELY OR SELECTIVELY. THE DISCRIMINATORS THEN COMPARE RESPONSES WITH THE ORIGINAL DATA ON A BIT-BY-BIT, WORD-BY-WORD BASIS. THE DISCRIMINATORS FURNISH A GO/NO-GO INDICATION ACCORDING TO PRESTORED THRESHOLD LEVELS. THE REPORT PROVIDES INFORMATION REPRESENTATIVE OF TEST EQUIPMENT FROM VARIOUS MANUFACTURERS, A LISTING OF MILITARY TEST EQUIPMENT, AND A TABULATION ACCORDING TO TESTER TYPES IN ORDER TO FACILITATE THE SELECTION OF SUITABLE TEST EQUIPMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 716 822 9/2 20/1 8/10
PENNSYLVANIA STATE UNIV UNIVERSITY PARK ORDNANCE RESEARCH LAB

THE DESIGN OF A DIGITAL SYSTEM FOR THE REAL TIME PREDICTION OF UNDERWATER SOUND PROPAGATION. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
SEP 70 234P TATE,DUANE C. ;
REPT. NO. TM-202-04
CONTRACT: N00017-70-C-1407

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING, *BATHYTHERMOGRAPH DATA), (*UNDERWATER SOUND, SOUND TRANSMISSION), MATHEMATICAL PREDICTION, DIGITAL SYSTEMS, DESIGN, REAL TIME, FLOW CHARTING, SYSTEMS ENGINEERING, INPUT OUTPUT DEVICES, LOGIC CIRCUITS, CONTROL SYSTEMS, MEMORY DEVICES, DISPLAY SYSTEMS, INTERFACES, TELETYPE SYSTEMS, THESES (U)
IDENTIFIERS: WAVE EQUATIONS (U)

THE DIGITAL RAY AND INTENSITY PROJECTOR (DRIP) WAS A PROTOTYPE SYSTEM DESIGN TO ILLUSTRATE THE FEASIBILITY AND USEFULNESS OF A SYSTEM CAPABLE OF MEASURING THE TEMPERATURE-DEPTH PROFILE OF AN OCEAN AREA AND PREDICTING THE EFFECTS OF THIS MEDIUM ON UNDERWATER SOUND PROPAGATION. DRIP WAS DESIGNED USING STANDARD, COMMERCIALLY AVAILABLE HARDWARE, EMPLOYING AN EXPENDABLE BATHYTHERMOGRAPH UNIT TO COLLECT THE BT DATA, A SMALL GENERAL PURPOSE DIGITAL COMPUTER FOR DATA PROCESSING, A CRT DISPLAY UNIT TO DISPLAY THE PREDICTIONS, AND A TELETYPEWRITER FOR COMMUNICATION WITH THE SYSTEM OPERATOR. SOFTWARE WAS DEVELOPED IMPLEMENTING SOUND RAY THEORY TECHNIQUES TO ACHIEVE THE DESIRED PREDICTIONS. THE SYSTEM WAS IMPLEMENTED, A STUDY MADE TO DETERMINE THE ACCURACY REQUIRED OF THE BT DATA, AND A COMPARISON MADE BETWEEN DRIP'S PREDICTIONS AND MEASURED DATA COLLECTED FOR VARIOUS ENVIRONMENTAL CONDITIONS TO DETERMINE THE ACCURACY OF THE SYSTEM'S PREDICTIONS. FINALLY, DRIP UNDER WENT ACTUAL SEA TRIALS WHERE THE SYSTEMS PERFORMED ALL ITS FUNCTIONS UNDER ACTUAL EXPERIMENTAL CONDITIONS. RESULTS OF THE EXPERIMENTAL TESTING OF DRIP SHOWED THAT SUCH A SYSTEM CAN RELIABLY PREDICT THE DISTORTION EFFECTS ON SOUND WAVE PROPAGATION CAUSED BY THE OCEAN MEDIUM. A SYSTEM SIMILAR TO DRIP CAN PROVE TO BE INVALUABLE AID TO OCEANOGRAPHIC RESEARCH. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 719 836 9/2 9/5
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

A FUNCTIONAL CONVERTER. (U)

NOV 70 11P LYUBARSKII,YU. YA. ;
FAIZULAEV,R. N. ;
REPT. NO. FTD-HT-23-495-70
PROJ: FTD-6050205
TASK: DIA-T68-05-02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF PATENT (USSR) 216 369 3P, 11 NOV 66, BY V. MESENZEFF.

DESCRIPTORS: (*DIGITAL TO ANALOG CONVERTERS, PERFORMANCE(ENGINEERING)), (*ANALOG-TO-DIGITAL CONVERTERS, DESIGN), ANALOG-DIGITAL COMPUTERS, INPUT OUTPUT DEVICES, MEMORY DEVICES, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

THE FUNCTIONAL CONVERTER FOR HYBRID COMPUTERS IN WHICH MACHIN VARIABLES ARE REPRESENTED BY ANALOG AND DIGITAL PARTS SEPARATELY, CONTAINING OUTPUT AND INPUT REGISTERS, A MEMORY UNIT, AND A DEVICE FOR INTERPOLATION, ARE DISTINGUISHED BY THE FACT THAT FOR THE PURPOSE OF IMPROVING ACCURACY AND SPEED, THE UNIT CONTAINS DIGITAL AND ANALOG INTERPOLATORS AND AN ASSESSMENT UNIT; THE INPUTS OF THE DIGITAL INTERPOLATOR ARE CONNECTED TO THE HIGH-ORDER DIGITS OF THE FUNCTION VALUES AT THE INTERPOLATION NODES STORED IN THE REGISTERS OF THE MEMORY DEVICE. THE INPUTS OF THE ANALOG INTERPOLATOR ARE CONNECTED TO THE LOW-ORDER DIGITS OF THE FUNCTION VALUES AT THE NODES, WHILE THE ASSESSMENT UNIT IS CONNECTED TO THE INPUT AND OUTPUT REGISTERS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 723 290 4/1 9/2
LOWELL TECHNOLOGICAL INST RESEARCH FOUNDATION MASS

DESIGN, DEVELOP AND FABRICATE AN IONOSPHERIC SOUNDING SYSTEM USING DIGITAL PHASE-COHERENT INTEGRATING TECHNIQUES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 15 MAY 68-31 DEC 70,
DEC 70 250P BIBL,KLAUS ;PATENAUDE,JOSEPH A. ;REINISCH,BODO W. ;VARGAS-VILA,RICHARD ;
REPT. NO. LTIRF-323/IP
CONTRACT: F19628-68-C-0267
PROJ: AF-7635
TASK: 763514
MONITOR: AFCRL 71-0001

UNCLASSIFIED REPORT

DESCRIPTORS: (*ATMOSPHERIC SOUNDING, DATA PROCESSING), (*IONOSPHERE, ATMOSPHERIC SOUNDING), ANALOG SYSTEMS, DIGITAL SYSTEMS, DISPLAY SYSTEMS, DATA STORAGE SYSTEMS, INTEGRATED CIRCUITS, WIRING DIAGRAMS (U)
IDENTIFIERS: *IONOSONDES (U)

MANY YEARS EXPERIENCE IN IONOSPHERIC PHYSICS AS WELL AS DESIGN AND OPERATION OF IONOSPHERIC SOUNDERS WERE THE BASIS FOR CREATION OF THE DIGISONDE 128. BY IMPLEMENTING THE LATEST ACHIEVEMENTS IN STATE OF THE ART TECHNOLOGY AND RECENT ADVANCEMENTS IN SOLID STATE ANALOG COMPONENTS AND DIGITAL ARRAYS, A TECHNICALLY SOPHISTICATED IONOSONDE HAS BEEN REALIZED. THE MAIN FEATURE OF THE DIGISONDE 128 IS THE CONTINUOUS MONITORING OF THE IONOSPHERE BY VERTICAL PULSE SOUNDING IN A LARGE FREQUENCY RANGE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 723 657 14/5 9/2
SPATIAL DATA SYSTEMS INC GOLETA CALIF

A DIGITAL PHOTOGRAPHIC DATA PROCESSOR AND DISPLAY SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 SEP 70-28 FEB 71,
MAR 71 13P ATHEARN,RALPH E. ;RUTLAND,
DAVID F. ;
CONTRACT: F19628-71-C-0019
PROJ: ILIR-3-70
TASK: ILIR-3-70-01
MONITOR: AFCRL 71-0249

UNCLASSIFIED REPORT

DESCRIPTORS: (*PHOTOGRAPHIC PROCESSORS, DIGITAL SYSTEMS), (*DATA PROCESSING, PHOTOGRAPHIC IMAGES), PHOTOGRAPHIC ANALYSIS, DISPLAY SYSTEMS, INPUT OUTPUT DEVICES, ATMOSPHERIC SOUNDING, TELEVISION DISPLAY SYSTEMS, COLOR TELEVISION (U)
IDENTIFIERS: CHEMICAL RELEASE STUDIES, FORTRAN (U)

A DIGITAL PICTURE PROCESSING SYSTEM FOR EXTRACTING INFORMATION FROM PHOTOGRAPHIC FILM RECORDS WAS CONSTRUCTED AND DELIVERED. THE SYSTEM USES A DIGITAL VIDEO CONVERTER THAT PERMITS PICTURE DATA TRANSFER AND DISPLAY BETWEEN A DIGITAL PROCESSOR AND A STANDARD 525 LINE TELEVISION SYSTEM. THE DIGITAL PROCESSOR HAS AN 8000 WORD CORE MEMORY AND A DIGITAL TAPE UNIT FOR STORAGE AND PROCESSING OF DIGITIZED PICTURES. THE DIGITAL VIDEO CONVERTER STORES A COMPLETE DIGITAL PICTURE CONSISTING OF 384 X 489 PICTURE ELEMENTS ON A MAGNETIC DISC. THE PICTURE ELEMENTS, EACH HAVING ONE OF 256 POSSIBLE SHADES OF GREY, ARE REFRESHED AT STANDARD TELEVISION RATES AND ARE DISPLAYED IN BLACK AND WHITE ON A TELEVISION MONITOR OR ANALYZED IN A COLOR TELEVISION DENSITOMETER DISPLAY. TELEVISION PICTURES OF PHOTOGRAPHIC TRANSPARENCIES ARE PRODUCED FROM A PRECISION CAMERA, DIGITIZED AT AN 8 MHZ SAMPLING RATE AND RECORDED ON THE DISC FOR SUBSEQUENT ANALYSIS BY THE DATA PROCESSOR. SOFTWARE FOR SELF-CHECKING THE SYSTEM, TRANSFERRING PICTURE DATA AND DIGITIZING PICTURES WAS SUPPLIED WITH THE EQUIPMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 724 757 9/2 14/5
MOORE SCHOOL OF ELECTRICAL ENGINEERING PHILADELPHIA PA

AN IMPROVED HYBRID SYSTEM FOR THE COMPUTER GENERATION OF ANIMATED MOTION PICTURES. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
MAY 71 45P FOUST,TILMAN H. , JR;
CONTRACT: DA-31-124-ARO(D)-352
MONITOR: AROD 5206:7-RT

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: MASTER'S THESIS.

DESCRIPTORS: (*DIGITAL COMPUTERS, GRAPHICS), (*MOTION PICTURE PROJECTORS, DIGITAL TO ANALOG CONVERTERS), INPUT OUTPUT DEVICES, CATHODE RAY TUBES, COMPUTER PROGRAMMING, COMPUTER PROGRAMS, THESES (U)
IDENTIFIERS: LIGHT PENS, ON LINE COMPUTERS, *COMPUTERS, *GRAPHICS, *INTERACTIONS, COMPUTER ANIMATION, *COMPUTER GENERATED MOTION PICTURES, *COMPUTERS, *GRAPHICS, COMPUTER SYSTEMS PROGRAMS (U)

THE FEASIBILITY OF A NEW HYBRID METHOD FOR THE GENERATION OF CURVED LINES IN COMPUTER MOVIES IS EXAMINED. THE METHOD ALLOWS CURVES OF ANY ARBITRARY SHAPE TO BE DISPLAYED ON THE FACE OF A CRT. AN ANALOG SYSTEM OF POLYNOMIAL GENERATORS, CONSTRUCTED OF CONVENTIONAL ANALOG COMPUTER COMPONENTS, IS DRIVEN BY D-A CONVERTERS CONNECTED TO THE DIGITAL COMPUTER. THE DIGITAL COMPUTER HAS SUBROUTINES WHICH PROCESS THE IMAGES STORED IN MEMORY INTO ARRAYS OF POLYNOMIAL COEFFICIENTS TO BE DISPLAYED ON THE CRT. ALSO DISCUSSED IS INTERACTIVE CONNECTION OF THIS SYSTEM SO THAT EDITING MAY BE ACCOMPLISHED IN THE ON-LINE MODE. THIS ELIMINATES MUCH OF THE TIME DELAY IN PRODUCTION OF THE COMPUTER MOVIES AND INCREASES THE OVERALL VERSATILITY OF THE SYSTEM. THE RESULTS INDICATE THAT THE SYSTEM MAY BE USED TO GENERATE MOVIES OF IMPROVED QUALITY MORE ECONOMICALLY THAN WITH THE PRESENT TOTALLY DIGITAL DISPLAY SYSTEMS GENERALLY USED IN COMPUTER MOVIES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 725 102 9/2
UTAH UNIV SALT LAKE CITY

GRAPHICAL MAN/MACHINE COMMUNICATIONS. (U)

DESCRIPTIVE NOTE: SEMI-ANNUAL TECHNICAL REPT. 1 JUL-31 DEC 70,
MAR 71 41P EVANS,DAVID C. ;
CONTRACT: F30602-70-C-0300, ARPA ORDER-829
MONITOR: RADC TR-71-74

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING, GRAPHICS), DIGITAL SYSTEMS, MAN MACHINE SYSTEMS, PHOTOGRAPHIC IMAGES, MEMORY DEVICES (U)
IDENTIFIERS: CELLULAR ARRAYS, SIGNAL PROCESSING, DATA PROCESSING, IMAGE CONVERTERS, IMAGES, SWITCHING THEORY, *COMPUTERS, *GRAPHICS (U)

THE DOCUMENT INCLUDES A SUMMARY OF RESEARCH ACTIVITIES AND FACILITIES AT THE UNIVERSITY OF UTAH. REPORT ABSTRACTS CONVEY IMPORTANT RESEARCH MILESTONES ATTAINED DURING THIS PERIOD BY EACH OF THE FOUR MAJOR RESEARCH ACTIVITIES: COMPUTER GRAPHICS TECHNIQUES; COMPUTER SYSTEMS; DIGITAL WAVEFORM PROCESSING; APPLICATIONS.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 727 852 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

THE GENERALITY OF COMBINED COMPUTING DEVICES WITH DIGITALLY CONTROLLED PARAMETERS, (U)

APR 71 10P SMOLOV,V. B. ;CHERNYAVSKII, E. A. ;

REPT. NO. FTD-HC-23-144-71

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF MONO. VYCHISTELNAYA TEKHNIKA (COMPUTER ENGINEERING, MINSK), MINSK, 1969 P168-171.

DESCRIPTORS: (*ANALOG-DIGITAL COMPUTERS, CONTROL SYSTEMS), DIGITAL SYSTEMS, ANALOG SYSTEMS, RELIABILITY(ELECTRONICS), AUTOMATION, USSR (U)
IDENTIFIERS: AUTOMATIC CONTROL, TRANSLATIONS (U)

A HIGH DEGREE OF UNIVERSALITY CAN BE ACHIEVED USING COMBINED (DIGITAL PLUS ANALOG) COMPUTER DEVICES. ONE TREND IN THE DEVELOPMENT OF COMBINED COMPUTER DEVICES IS THE USAGE OF DIGITAL CONTROLLED PARAMETERS, BASED ON THE SYMBOL DECISION ELEMENT CHARACTERISTIC FOR THESE DEVICES. THE MOST WIDESPREAD DEVICE OF THIS TYPE AT THE PRESENT IS THE DIGITAL CONTROLLED RESISTANCE. THE UNIVERSALITY OF COMBINED COMPUTER DEVICES WITH DIGITAL CONTROLLED PARAMETERS CAN BE INCREASED BY PROGRAMMED CONTROL AND REPEATED UTILIZATION OF THE DIGITAL CONTROLLED ELEMENTS IN SOLVING THE SAME OR DIFFERENT PROBLEMS. BLOCK DIAGRAMS OF SEVERAL VARIANTS OF SUCH DEVICES ARE PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 730 028 9/5 19/5
NAVAL ORDNANCE LAB WHITE OAK MD

DESCRIPTION AND EVALUATION OF A WEAPON SWITCHING/ADAPTER CONCEPT FOR USE IN A SUBMARINE DIGITAL FIRE CONTROL SYSTEM, (U)

MAY 71 78P CARMICHAEL,JAMES D. ;CUTLER, JAMES R. ;
REPT. NO. NOLTR-71-75
PROJ: ORD-521-012/092-1/UF17-341-407

UNCLASSIFIED REPORT

DESCRIPTORS: (*FIRE CONTROL COMPUTERS, *SWITCHING CIRCUITS), (*FIRE CONTROL SYSTEMS, *SUBMARINES), DIGITAL SYSTEMS, ADAPTIVE SYSTEMS, WEAPON SYSTEMS, SWITCHING CIRCUITS (U)

THERE WILL BE A NEED FOR A WEAPON SWITCHING/ADAPTER CAPABILITY IN THE INTERFACE BETWEEN FUTURE DIGITAL FIRE CONTROL SYSTEMS AND THE WEAPONS TO BE SET. IN ORDER TO UNDERSTAND BETTER HOW TO ANSWER THIS NEED A WEAPON INTERFACE CONFIGURATION HAS BEEN POSTULATED. THE REPORT DESCRIBES A WEAPON SWITCHING/ADAPTER CONCEPT FOR USE IN SUCH AN INTERFACE. BASIC DESIGN GOALS ARE DEFINED, COMPONENT AND CONFIGURATION TRADE-OFFS ARE DISCUSSED, A LABORATORY UNIT IS DESCRIBED AND AN EVALUATION OF THE SELECTED APPROACH IS PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 732 441 1/7 1/3
NAVAL AIR SYSTEMS COMMAND WASHINGTON D C

PRESENTATION OF ADVANCED AVIONIC DIGITAL COMPUTER BASELINE DEFINITION, (U)

SEP 69 57P ENTNER,RONALD S. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-732 440.

DESCRIPTORS: (*NAVIGATION COMPUTERS, DIGITAL SYSTEMS), (*NAVAL AIRCRAFT, NAVIGATION COMPUTERS), DIGITAL COMPUTERS, INTEGRATED CIRCUITS, MODULES(ELECTRONICS), INPUT-OUTPUT DEVICES, SYSTEMS ENGINEERING (U)
IDENTIFIERS: AADC(ADVANCED AVIONICS DIGITAL COMPUTERS), ADVANCED AVIONICS DIGITAL COMPUTERS, AVIONICS (U)

THE PURPOSE OF THE ADVANCED AVIONIC DIGITAL COMPUTER PROGRAM IS TO ACHIEVE THOSE GOALS EXPRESSED IN OUR FIRST VIEW GRAPH, (VG 1) THAT IS: TO DEVELOP A BUILDING BLOCK AVIONIC COMPUTER SYSTEM WITH BOTH MODULAR HARDWARE AND SOFTWARE. TO DEVELOP A COST-EFFECTIVE APPROACH IN THE AREA OF MICROPROGRAMMING. TO ACHIEVE A SYSTEM WHICH FAILS GRACEFULLY IN BOTH HARDWARE AND SOFTWARE, AND WHICH, LAST OF ALL, HAS SOME MEASURE OF RADIATION RESISTIVITY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 733 032 9/2 6/11
NORTH DAKOTA UNIV GRAND FORKS

AN INTERFACE AND BACKUP CONTROLLER FOR DDC OF A HIGH PRESSURE LIFE LABORATORY. (U)

NOV 71 1P BARES,WILLIAM A. ;BALDANA, LUIS N. ;

CONTRACT: N00014-68-A-0499
PROJ: NR-101-753

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN PROCEEDINGS OF THE ACEMB (24TH) HELD AT THE INTERNATIONAL HOTEL, LAS VEGAS, NEV., ON 31 OCT-4 NOV 71.

DESCRIPTORS: (*CONTROLLED ATMOSPHERES, DIGITAL COMPUTERS), (*LIFE SUPPORT, OCEAN BOTTOM), DIGITAL-TO-ANALOG CONVERTERS, MULTIPLEX, CIRCUITS (U)
IDENTIFIERS: DATA REDUCTION (U)

THE PAPER DEALS WITH THE PROCESS INTERFACE AND BACKUP CONTROLLER FOR DIRECT DIGITAL CONTROL (DDC) OF A HIGH PRESSURE LIFE LABORATORY (HPLL). (1) MAJOR PROBLEM AREAS INVOLVED IN PROCESS DDC INCLUDE ANALOG STORAGE AND DIGITAL COMPUTER BACKUP IN CASE OF FAILURE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 733 353 14/2 21/5
SOUTHWEST RESEARCH INST SAN ANTONIO TEX

A FACILITY AND INSTRUMENTATION FOR STUDYING ENGINE CONTROL AND PERFORMANCE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. 2 DEC 69-1 JUN 71, NOV 71 100P JOHNSON,JAMES E. ;ASTLEFORD, WILLIAM J. ;HOLSTER,JESSE L. ;BASS,ROBERT L. , III;GERLACH,C. RICHARD ;
REPT. NO. SWRI-RS-576
CONTRACT: F33615-69-C-1231
PROJ: AF-3066
MONITOR: AFAPL TR-71-80

UNCLASSIFIED REPORT

DESCRIPTORS: (*TEST FACILITIES, *TURBOJET ENGINES), DIGITAL SYSTEMS, SENSORS, FLUID FLOW, MULTIPLEX, ANALOG SYSTEMS, DATA PROCESSING SYSTEMS, CONTROL SYSTEMS, RESPONSE, INSTRUMENTATION (U)

THE GENERAL OBJECTIVES OF THE PRESENT STUDY ARE THREEFOLD: (1) TO IMPLEMENT AN ENGINE TEST FACILITY INCORPORATING A DIGITAL COMPUTER FOR DATA REDUCTION AND ANALYSIS, AND FOR ADVANCED CONTROL AND PERFORMANCE STUDIES, (2) TO ADVANCE THE STATE-OF-THE-ART OF INSTRUMENTATION FOR MEASURING FLOW VARIABLES AND OTHER PARAMETERS IN PROPULSION SYSTEMS, AND (3) TO PROVIDE FEASIBILITY DEMONSTRATIONS OF NEW PARAMETER SENSING TECHNIQUES FOR CONTROL APPLICATIONS, OF NEW CONTROL MECHANIZATIONS, OF ADVANCED ENGINE CONTROL LOOPS, AND OF HIGH RESPONSE ACTUATORS. INITIAL STUDIES OF A SINGLE RESONANT TUBE FLUIDIC TEMPERATURE SENSOR HAVE DEMONSTRATED ITS POTENTIAL FOR TURBINE INLET TEMPERATURE SENSING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 734 073 8/2 9/2
HAMILTON STANDARD WINDSOR LOCKS CONN

THE RADC CARTOGRAPHIC TEST STANDARD. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. AUG 70-JUL 71,
NOV 71 164P BYRD,J. R. ;LEE,H. R. ;
SHARP,D. L. ;SKOLNICK,R. I. ;
REPT. NO. HSER-5883
CONTRACT: F30602-70-C-0259
MONITOR: RADC TR-71-196

UNCLASSIFIED REPORT

DESCRIPTORS: (*MAPPING, AUTOMATION), QUALITY CONTROL, MAINTENANCE, DIGITAL SYSTEMS, PLOTTERS, GRAPHICS, DATA PROCESSING SYSTEMS, STANDARDS (U)
IDENTIFIERS: ACS(ADVANCED CARTOGRAPHIC SYSTEM), ADVANCED CARTOGRAPHIC SYSTEM (U)

A CARTOGRAPHIC TEST STANDARD (CTS), HAS BEEN DESIGNED AND FABRICATED FOR UTILIZATION IN THE RADC EXPERIMENTAL CARTOGRAPHIC FACILITY (ECF). THE CTS EXISTS IN TWO FORMS: DIGITAL AND GRAPHICAL. THE DIGITAL VERSION IS THE ORIGINAL *MASTER* STANDARD; FROM IT THE GRAPHICAL STANDARD WAS PRODUCED DIRECTLY ON A GLASS SUBSTRATE USING AN EXTREMELY HIGH ACCURACY OF DIGITAL PLOTTER, PHOTORESIST IMAGING, AND ETCH-AND-FILL IMAGE FIXING TECHNIQUES. THE CTS DESIGN WAS BASED ON AN ANALYSIS OF BOTH CURRENT AND ANTICIPATED ECF HARDWARE AND SOFTWARE CAPABILITIES, CHART FINISHING REQUIREMENTS OF THE AERONAUTICAL CHART AND INFORMATION CENTER (ACIC), AVAILABLE TECHNOLOGIES CAPABLE OF TEST STANDARD FABRICATION, AND A VARIETY OF DIGITAL AND GRAPHICAL TECHNIQUES FOR ERROR DETERMINATION. THE FUNCTION OF THE CTS IS TO TEST THE RESOLUTION, REPEATABILITY, AND ACCURACY OF THE COMPLEMENT OF DIGITAL/GRAPHIC EQUIPMENTS EMPLOYED WITHIN THE ECF. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 737 106 17/6 13/10.1
AERONAUTICAL CHART AND INFORMATION CENTER ST LOUIS MO
TECHNICAL TRANSLATION SECTION

FREQUENCY ANALYSIS OF DISTURBANCES OF SUBMARINE VESSELS (CHASTOTNYI ANALIZ VOZMUSHCHENII PODVODNOI LODKI). (U)

JAN 72 21P BELOBZESKII,L. A. ;
POLIKARPOV,A. M. ;SAVCHENKO,A. S. ;TULIN,V.
A. ;
REPT. NO. ACIC-TC-1779

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. APPARATURA I METODY IZMERENIYA SILY TYAZHESTI NA MORE (INSTRUMENTS AND METHODS FOR MEASURING GRAVITY AT SEA), MOSCOW, 1970 P40-49, BY GEORGE SYNENKO.

DESCRIPTORS: (*MAGNETIC ANOMALY DETECTION, DATA PROCESSING), (*SUBMARINES, ANOMALIES), ACOUSTIC SIGNALS, SPECTRUM SIGNATURES, DIGITAL TO ANALOG CONVERTERS, ERRORS, RECORDING SYSTEMS, USSR (U)
IDENTIFIERS: GRAVIMETRY, TRANSLATIONS, COMPUTER AIDED ANALYSIS (U)

A METHOD IS DESCRIBED OF FINDING THE SPECTRAL CHARACTERISTICS OF A MARINE GRAVIMETER SIGNAL WITH PHOTO RECORDING BY THE USE OF AN ANALOG COMPUTER. THE ACCURACY ESTIMATION OF CALCULATIONS WITH THE USE OF THE INDICATED ANALOG AND DIGITAL COMPUTERS IS PRESENTED. IT IS SHOWN THAT THE MAIN PERIOD OF DISTURBING ACCELERATIONS IS FOUND IN THE AREA OF 250 SEC. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 738 297 17/2.1 9/2
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

A SIMULATION FACILITY FOR COMMUNICATION SYSTEMS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
DEC 71 28P MCNEILL,DALE A. ;
REPT. NO. TR-489
CONTRACT: F19628-70-C-0230
PROJ: AF-1508A
MONITOR: ESD TR-71-324

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMMUNICATION SYSTEMS, SIMULATION), (*RADIO EQUIPMENT, SIMULATION), COMPUTERS, EXTREMELY LOW FREQUENCY, DIGITAL SYSTEMS (U)
IDENTIFIERS: SANGUINE PROJECT, COMPUTERIZED SIMULATION (U)

A SIMULATION FACILITY, CONSISTING OF A SMALL GENERAL-PURPOSE COMPUTER, ASSOCIATED PERIPHERALS, AND EXTENSIVE SOFTWARE, HAS BEEN DEVELOPED FOR ANALYZING COMMUNICATION SYSTEMS. PRESENTLY, THE FACILITY IS BEING USED TO DEVELOP AN ALL DIGITAL SANGUINE RECEIVER AND TO GATHER PERFORMANCE STATISTICS ON THE RECEIVER. THE FACILITY AND THE SIMULATED SANGUINE TRANSMITTER AND TRANSMISSION CHANNEL NECESSARY FOR OPERATING THE RECEIVER ARE DESCRIBED.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 738 970 8/10 9/2
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

LOW POWER DIGITAL INTEGRATED CIRCUIT DESIGN FOR AN UNUSUAL EVENT DETECTOR. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
JUN 71 105P BRUNINGA,ROBERT ERVIN ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*OCEANOGRAPHIC EQUIPMENT, DETECTORS), (*DATA PROCESSING, OCEANOGRAPHIC DATA), (*INTEGRATED CIRCUITS, DESIGN), LOGIC CIRCUITS, DIGITAL SYSTEMS, DETECTORS, SYSTEMS ENGINEERING, THESES (U)
IDENTIFIERS: LARGE SCALE INTEGRATED CIRCUITS, MEDIUM SCALE INTEGRATED CIRCUITS, METAL OXIDE SEMICONDUCTORS, COMPUTERIZED SIMULATION (U)

A DEEP OCEAN CAPSULE IS PROPOSED CAPABLE OF SENSING PRESSURE, TEMPERATURE, FLOW AND DIRECTION FOR A STUDY OF TIDES AND INTERNAL WAVES OF THE OCEANS. ONE OF THE MAJOR REQUIREMENTS FOR THIS CAPSULE IS THE DETECTION AND RECORDING OF UNUSUAL EVENTS. TO MEET THIS NEED A VERY LOW POWER, HIGHLY RELIABLE DIGITAL DETECTOR HAS BEEN DESIGNED. COS/MOS LOGIC WITH MAXIMUM USE OF MSI AND LSI WAS USED IN THE DESIGN. THE DETECTOR WAS SIMULATED USING PROPOSED WORD LENGTHS AND FIXED POINT ARITHMETIC WHICH WOULD BE UTILIZED IN THE ENSUING HARDWARE. THE FIXED POINT SIMULATION WAS NECESSARY TO VERIFY THE PROBLEMS IN TRUNCATION AND ROUND-OFF ERRORS AND TO PROVIDE NECESSARY DESIGN CRITERIA TO ENSURE PROPER FILTER FUNCTIONING AND INTEGRAL DETECTION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 739 142 14/5 9/2
DEUTSCHE FORSCHUNGS- UND VERSUCHSANSTALT FUER LUFT- UND RAUMFAHRT E V OBERPFAFFENHOFEN (WEST GERMANY)

EINIGE VERFAHREN DER DIGITALEN BILDVERARBEITUNG (A PROCEDURE FOR DIGITAL IMAGE PROCESSING), (U)

71 12P KRITIKOS,VON G. ;
REPT. NO. DFVLR-SONDERDRUCK-170

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN BILDMESSUNG UND LUFTBILDWESEN, V6 P242-252 1971. NO COPIES FURNISHED BY DDC OR NTIS.
SUPPLEMENTARY NOTE: TEXT IN GERMAN. SUMMARY IN ENGLISH.

DESCRIPTORS: (*PHOTOGRAPHIC IMAGES, DATA PROCESSING), AERIAL PHOTOGRAPHY, INFRARED PHOTOGRAPHY, DIGITAL SYSTEMS, WEST GERMANY, GERMAN LANGUAGE (U)
IDENTIFIERS: *DATA PROCESSING, *IMAGE CONVERTERS, *IMAGES (U)

BY THE HELP OF LOCAL OPERATIONS IN DIGITAL PICTURE PROCESSING IT IS POSSIBLE TO DISPLAY SPECIAL PICTURE INFORMATIONS CORRESPONDING TO THE CASE OF APPLICATION. WITH A DENSITY INTERVAL AN EQUIDENSITY FILM IS SIMULATED. SECOND ORDER EQUIDENSITIES CAN BE EXTRACTED DIRECTLY FROM THE ORIGINAL PICTURE BY ADDITIONAL APPLICATION OF THE FIRST DERIVATION. THE EQUIDENSITY AREAS CAN BE COUNTED. THE EQUIDENSITIES OF MIXED ORDER WHICH ARE COMBINATIONS OF FIRST AND SECOND ORDER EQUIDENSITIES ARE EFFECTED BY A QUANTISATION PROCESS WITH THE FOLLOWING DERIVATION OF THE PICTURE AND SOME ADDITIONAL CONDITIONS. THE USE OF A WELL KNOWN PHYSIOLOGICAL EFFECT ALLOWS A PSEUDOPLASTIC DISPLAY OF THE PICTURES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 739 707 14/2
STANFORD UNIV CALIF STANFORD ELECTRONICS LABS

SEMI-ANNUAL STATUS REPORT NO. 121, 1 JULY THROUGH 31 DECEMBER 1971. (U)

DEC 71 101P
REPT. NO. SU-SEL-72-002
CONTRACT: N00014-67-A-0112-0044

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED 31 JULY 71, AD-730 055.

DESCRIPTORS: (*ELECTRONICS, SCIENTIFIC RESEARCH), PLASMAS(PHYSICS), LASERS, PROPAGATION, INTEGRATED CIRCUITS, SOLID STATE PHYSICS, INFORMATION THEORY, DIGITAL SYSTEMS, PATTERN RECOGNITION, ATMOSPHERIC SOUNDING, DATA PROCESSING (U)
IDENTIFIERS: QUANTUM ELECTRONICS (U)

;CONTENTS: PLASMA PHYSICS AND QUANTUM ELECTRONICS; RADIOSCIENCE; INTEGRATED CIRCUITS; SOLID STATE; INFORMATION SYSTEMS; DIGITAL SYSTEMS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 739 738 9/2
NAVAL RESEARCH LAB WASHINGTON D C

SIMULATION OF AADC SIMPLEX AND MULTIPROCESSOR OPERATION. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,
FEB 72 118P SMITH,WILLIAM R. ;
REPT. NO. NRL-7356
PROJ: NRL-802-06, WF15-241-601

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERS, MATHEMATICAL MODELS), (*NAVAL AIRCRAFT, COMPUTERS), DIGITAL SYSTEMS, DATA STORAGE SYSTEMS, SIMULATION, COMPUTER PROGRAMMING (U)
IDENTIFIERS: MULTIPROCESSING, AADC(ADVANCED AVIONICS DIGITAL COMPUTERS), ADVANCED AVIONICS DIGITAL COMPUTERS, ADVANCED AVIONICS DIGITAL COMPUTER, AVIONICS, SIMULATOR ROUTINES, SIMSCRIPT PROGRAMMING LANGUAGE (U)

SIMULATION OF A PROPOSED NAVAL ADVANCED AVIONIC DIGITAL COMPUTER (AADC) HAS BEEN UNDERWAY TO ARRIVE AT ARCHITECTURES WHICH EFFICIENTLY MEET THE NEEDS OF EXPECTED PROGRAM WORKLOADS. MODELS OF AVIONIC PROGRAM WORKLOADS HAVE BEEN DERIVED FROM VARIOUS SOURCES AND USED TO DRIVE THESE SIMULATIONS. THESE MODELS CONSIST OF SETS OF NEARLY INDEPENDENT PROGRAM MODULES WHICH EFFECT PERIODIC, KNOWN DEMANDS ON SYSTEM RESOURCES. SIMPLEX AND MULTIPROCESSOR CONFIGURATIONS OF THE AADC HAVE BEEN MODELED, AND CERTAIN FEATURES OF PROPOSED AADC EXECUTIVE OPERATION HAVE BEEN INCORPORATED INTO THESE MODELS. GUIDED BY PREVIOUS SIMULATION WORK, BOTH NONPAGED AND PAGED OPERATING SYSTEMS WITH MULTIPROGRAMMED MEMORIES HAVE BEEN SIMULATED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 740 321 5/9 17/9
PENNSYLVANIA RESEARCH ASSOCIATES INC PHILADELPHIA

DEVELOPMENT OF A HYBRID RADAR LANDMASS SIMULATOR: ENGINEERING REPORT NUMBER 1. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.
JUL 68 24P
REPT. NO. PRA-U68-1134
CONTRACT: N61339-68-C-0155
MONITOR: NAVTRADEVCEN 68-C-0155-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ENGINEERING REPT. NO. 3, AD-740 322.

DESCRIPTORS: (*RADAR TRAINERS, DIGITAL SYSTEMS), (*RADAR IMAGES, SIMULATORS), DIGITAL COMPUTERS, TERRAIN, REFLECTIVITY, RADAR SCANNING (U)
IDENTIFIERS: RADAR, SIMULATION, DIGITAL SIMULATION (U)

PREVIOUS WORK PERFORMED BY PENNSYLVANIA RESEARCH ASSOCIATES, INC. FOR THE UNITED STATES NAVAL TRAINING DEVICE CENTER DEMONSTRATED THE TECHNICAL AND ECONOMIC FEASIBILITY OF A RADAR LANDMASS SIMULATOR COMPOSED OF A GENERAL-PURPOSE DIGITAL COMPUTER. THE COMPUTER OPERATED ON DIGITALLY STORED DATA AND THROUGH SELECTED HYBRID EQUIPMENTS, INCLUDING A SCAN CONVERSION TUBE, PRODUCED THE RADAR VIDEO SIGNAL. THE PRESENT INVESTIGATION RELATES TO THE FIRST PHASE OF A FOUR-PHASE PROGRAM TO IMPLEMENT THE REAL TIME RADAR SIMULATOR. PHASE I INVOLVES THE PRESENTATION OF STATIC DISPLAYS OF CULTURAL DATA USING A SCAN CONVERTER SYSTEM. THIS REPORT DISCUSSES THE SIZE AND SHAPES OF DATA TO BE DISPLAYED; AND INDICATES TESTS AND TEST CRITERIA TO BE USED IN EVALUATING THE SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 740 322 5/9 17/9
PENNSYLVANIA RESEARCH ASSOCIATES INC PHILADELPHIA

DEVELOPMENT OF A HYBRID RADAR LANDMASS SIMULATOR: ENGINEERING REPORT NUMBER 3. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.
MAY 69 37P
REPT. NO. PRA-069-1220
CONTRACT: N61339-68-C-0155
MONITOR: NAVTRADEVCEN 68-C-0155-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ENGINEERING REPT. NO. 1. AD-740 321.

DESCRIPTORS: (•RADAR TRAINERS, DIGITAL SYSTEMS), (•RADAR IMAGES, SIMULATORS), DIGITAL COMPUTERS, RADAR SCANNING, COMPUTER PROGRAMMING, TERRAIN (U)

THE PRESENT REPORT APPLIES TO THE SECOND AND THIRD PHASES OF A FOUR-PHASE PROGRAM IMPLEMENTING THE REAL-TIME RADAR SIMULATOR. PHASE 3 COVERS PRESENTATION OF DYNAMIC DISPLAYS OF TERRAIN DATA IN ADDITION TO THE CULTURE DATA DISPLAYED IN PHASE 2. ONLY THOSE AREAS IN WHICH THE PHASE 3 SYSTEM AFFECTS THE PHASE 2 SYSTEM ARE DISCUSSED. THE PHASE 2 SYSTEM IS DESIGNED TO ADD THE PHASE 3 SYSTEM IN A MODULAR FASHION; THIS REPORT DESCRIBES THE HARDWARE AND SOFTWARE TO DO SO. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 740 326 4/2
STANFORD RESEARCH INST MENLO PARK CALIF

OBJECTIVE METHODS FOR REGISTERING LANDMARKS AND DETERMINING CLOUD MOTIONS FROM SATELLITE DATA, (U)

OCT 71 48P ENDLICK,R. M. ;HALL,D. J. ;WOLF,D. E. ;BRAIN,A. E. ;

CONTRACT: N62306-71-C-0068
PROJ: SRI-1005
MONITOR: FAMOS TR-8-71

UNCLASSIFIED REPORT

DESCRIPTORS: (*CLOUDS, PHOTOINTERPRETATION), (*METEOROLOGICAL SATELLITES, DATA PROCESSING), WEATHER FORECASTING, PICTURES, DIGITAL SYSTEMS, PATTERN RECOGNITION, TEMPLATES, GRAPHICS (U)
IDENTIFIERS: ATS-3 SATELLITE, SPACEBORNE PHOTOGRAPHY (U)

METHODS ARE DESCRIBED FOR MATCHING LANDMARKS IN CLOUD PHOTOGRAPHS MADE BY ATS SATELLITES SO THAT SEQUENCES OF SUCH PHOTOGRAPHS CAN BE PRECISELY REGISTERED. CLOUD MOTIONS MAY THEN BE DERIVED BY COMPARING POSITIONED DATA ON SUCCESSIVE PICTURES. ACCURATE REGISTRATION IS NEEDED BECAUSE THE SATELLITES CANNOT BE PLACED IN IDEAL SYNCHRONOUS ORBITS WITH PERFECT ATTITUDE STABILITY. THUS, THE SATELLITE SUBPOINT AND ATTITUDE ANGLES VARY WITH TIME. FOR THE ATS-III SATELLITE THE PERTURBATIONS ARE SMALL ENOUGH TO ALLOW CORRECTIONS TO BE MADE. THE METHODS GIVEN IN THIS REPORT ARE OBJECTIVE AND ARE PERFORMED BY THE COMPUTER, USING DIGITAL BRIGHTNESS DATA. IN A GENERAL WAY THEY SIMULATE HUMAN (VISUAL) TECHNIQUES FOR PERFORMING THE SAME SORT OF MANIPULATIONS. CORRECTIONS NEEDED TO REGISTER ONE PICTURE TO ANOTHER ARE DETERMINED FROM THE DATA TRANSMITTED BY THE SATELLITE AND RECORDED BY A GROUND STATION AND DO NOT DEPEND ON KNOWLEDGE OF THE SPACECRAFT'S BEHAVIOR. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 741 333 17/9 15/3 15/3.1
ARMY MISSILE COMMAND REDSTONE ARSENAL ALA ADVANCED SENSORS DIRECTORATE

EXPERIMENTAL ARRAY RADAR SYSTEM SYNCHRONIZATION AND DATA TRANSFER, (U)

DEC 71 55P HATCHER,JOHN L. ;INCONTRERA, PAUL G. ;NOE,EVERETT M. , JR;
REPT. NO. RE-TR-71-8
PROJ: DA-1-M-262303-A-214

UNCLASSIFIED REPORT

DESCRIPTORS: (*MONOPULSE RADAR, SYNCHRONIZATION(ELECTRONICS)), C BAND, PHASED ARRAYS, DATA PROCESSING, DIGITAL SYSTEMS, CONTROL SYSTEMS, AIRCRAFT DEFENSE SYSTEMS, ANTIMISSILE DEFENSE SYSTEMS(U)

THE MICOM EXPERIMENTAL ARRAY RADAR (EAR) IS A C-BAND, PHASE MONOPULSE, PHASED ARRAY RADAR DESIGNED TO PERFORM THE FUNCTIONS OF SECTOR SEARCH AND TARGET TRACK FOR AIR DEFENSE APPLICATIONS. THE RADAR IS COMPUTER CONTROLLED AND CONTAINS SEVERAL HARD-WIRED DIGITAL PROCESSING FUNCTIONS. ITS VARIOUS MODES OF OPERATION REQUIRE CONSIDERABLE DATA TRANSFER AND FUNCTION CONTROL. IN ADDITION, PRECISE TIMING RELATION RELATIONSHIPS ARE REQUIRED BETWEEN TRANSMITTED PULSES AND THE SEVERAL PROCESSING FUNCTIONS THAT ARE PERFORMED. THE REPORT DETAILS ALL THE DATA TRANSFER, FUNCTION CONTROL, AND TIMING REQUIREMENTS FOR THE EAR SYSTEM, AND DESCRIBES THE DESIGN AND IMPLEMENTATION OF A SYNCHRONIZER TO PROVIDE ALL THE TIMING FUNCTIONS FOR OPERATION OF THE SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 742 060 9/2 17/9
NAVAL RESEARCH LAB WASHINGTON D C

A HIGH-SPEED PARALLEL ANALOG-TO-DIGITAL CONVERTER. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 72 16P BALDAUF,RICHARD K. ;
LEIBOWITZ,LAWRENCE M. ;
REPT. NO. NRL-MR-2423
PROJ: NRL-53R02-46, PM-16-40-058C-2W44150000

UNCLASSIFIED REPORT

DESCRIPTORS: (*ANALOG-TO-DIGITAL CONVERTERS, RADAR EQUIPMENT), (*RADAR SIGNALS, DATA PROCESSING), OCEAN SURVEILLANCE, DIGITAL SYSTEMS (U)
IDENTIFIERS: SIGNAL PROCESSING (U)

AS THE RESULT OF AN APPLICATION TO A DIGITAL RADAR DATA PROCESSOR, A HIGH-SPEED A/D CONVERTER TECHNIQUE HAS BEEN DEVELOPED. A PARALLEL REGISTER AND A DECODER CIRCUIT, 4-BIT A/D CONVERSION TIMES WITHIN 100 NS HAVE BEEN OBTAINED IN AN EXPERIMENTAL MODEL, USING HIGH-SPEED DIFFERENTIAL COMPARATORS. THE TECHNIQUE DESCRIBED PROVIDES SIMPLICITY IN DESIGN AND EXPANDABILITY IN RESOLUTION AS WELL AS FLEXIBILITY IN THE CHOICE OF OUTPUT CODE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 743 904 9/4
NAVAL ORDNANCE LAB WHITE OAK MD

RAPID DETECTION OF SPECTRAL LINE COMPONENTS IN WIDEBAND NOISE USING A SWEPT SECOND-ORDER PHASE-LOCKED LOOP PRECEDED BY A DIGITAL TIME COMPRESSOR, (U)

FEB 72 100P ZIRBEL,JOHN P. ;
REPT. NO. NOLTR-72-48
PROJ: NAVELEX-3656/X3656

UNCLASSIFIED REPORT

DESCRIPTORS: (*INFORMATION THEORY, PHASE LOCKED SYSTEMS), DATA PROCESSING, SPECTRUM ANALYZERS, COMPUTER PROGRAMS, DIGITAL SYSTEMS, PROBABILITY DENSITY FUNCTIONS, SIMULATION, LINE SPECTRA, THESES (U)
IDENTIFIERS: *SIGNAL PROCESSING, *SPECTRUM ANALYSIS, DIGITAL SIMULATION (U)

IN SOME INFORMATION PROCESSING SYSTEMS, IT IS DESIRABLE TO BE ABLE TO DETECT THE PRESENCE OF 'WEAK' SPECTRAL LINE COMPONENTS IN WIDEBAND NOISE. IN LOW-POWER AND/OR LOW-COST SYSTEMS, SUCH SPECTRAL LINE DETECTION IS PRESENTLY MOST ECONOMICALLY ACCOMPLISHED THROUGH THE USE OF A SWEPT PHASE-LOCKED LOOP. WHEN EMPLOYED IN THIS MANNER, THE LOOP CAN BE CONSIDERED AS A KIND OF VARIABLE CENTER FREQUENCY BANDPASS FILTER THAT PASSES SIGNALS AND REJECTS NOISE. WHEN THE BANDWIDTH OF THIS 'FILTER' IS NARROW RELATIVE TO THE TOTAL FREQUENCY BAND TO BE SEARCHED, THE TIME REQUIRED TO SWEEP THROUGH THE BAND MAY BE EXCESSIVE. THIS REPORT DISCUSSES THE MANNER IN WHICH TIME-COMPRESSION TECHNIQUES CAN BE EMPLOYED TO REDUCE THE REQUIRED DETECTION TIME. THIS IS DONE BY USING A DIGITAL TIME COMPRESSOR AT THE INPUT TO THE PHASE-LOCKED LOOP. THE RESULTING SYSTEM IS CALLED A 'FAST PHASE-LOCKED LOOP.' (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 744 130 17/10 8/11 18/3
LAMONT-DOHERTY GEOLOGICAL OBSERVATORY PALISADES N Y

LONG-PERIOD SEISMOLOGICAL RESEARCH PROGRAM. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. 15 MAR 71-14 MAR 72,
APR 72 34P SYKES,LYNN R. ;SAVINO,JOHN M. ;
CONTRACT: F44620-71-C-0082, ARPA ORDER-1774
PROJ: ARPA-1F10
MONITOR: AFOSR TR-72-1215

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-735 765.

DESCRIPTORS: (*SEISMOLOGICAL STATIONS, NOISE), (*UNDERGROUND EXPLOSIONS, DETECTION), SEISMOMETERS, POWER SPECTRA, EARTHQUAKES, NUCLEAR EXPLOSIONS, MICROSEISMS, SIGNAL-TO-NOISE RATIO, ANALOG SYSTEMS, DIGITAL SYSTEMS, DATA PROCESSING (U)
IDENTIFIERS: LONG PERIOD SEISMOMETERS, DIGITAL FILTERS (U)

DURING THE FIRST YEAR OF THE SUBJECT CONTRACT, THE PURPOSE OF THE RESEARCH PROGRAM WAS TWOFOLD: (1) TO MAINTAIN THE PREVIOUSLY INSTALLED HIGH-GAIN SEISMOGRAPH STATIONS AT THE FOLLOWING FIVE STATIONS: CHARTERS TOWERS, AUSTRALIA (CTA); FAIRBANKS, ALASKA (FBK); EILAT, ISRAEL (EIL); CHIANG MAI, THAILAND (CHG); AND OGDENSBURG, NEW JERSEY (OGD), AND TO INSTALL AND MAINTAIN A SIXTH HIGH-GAIN STATION AT TOLEDO, SPAIN (TLO). (2) TO CONDUCT RESEARCH ON THE LONG-PERIOD ANALOG AND DIGITAL DATA FROM THE ABOVE SIX STATIONS AND FROM THE TWO ADDITIONAL STATIONS INSTALLED AT ALBUQUERQUE, NEW MEXICO (ALQ) AND KONGSBERG, NORWAY (KON), BY PERSONNEL FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA). THE MOST SIGNIFICANT FINDING OF THE ANALYSIS OF DATA PERTINENT TO THE EARTHQUAKE-EXPLOSION DISCRIMINATION PROBLEM IS ONE BASED ON RESULTS FROM THE SEISMIC DETECTION, DISCRIMINATION, EARTH NOISE, AND DIGITAL FILTERING STUDIES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 745 790 9/4 17/2
UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES DEPT OF ELECTRICAL ENGINEERING

BIBLIOGRAPHY ON DIGITAL IMAGE PROCESSING AND RELATED TOPICS. (U)

FEB 72 267P
REPT. NO. USCEE-410
CONTRACT: F08606-72-C-0008, ARPA ORDER-1706

UNCLASSIFIED REPORT

DESCRIPTORS: (*INFORMATION THEORY, *BIBLIOGRAPHIES), (*COMMUNICATION SYSTEMS, INFORMATION THEORY), IMAGES, CODING, DATA PROCESSING, DETECTION, DIGITAL SYSTEMS (U)
IDENTIFIERS: *DATA PROCESSING, *IMAGE CONVERTERS, *IMAGES (U)

THE BIBLIOGRAPHY CONTAINS REFERENCES TO BOOKS, REPORTS, AND OTHER PUBLICATIONS ON THE GENERAL SUBJECT OF DIGITAL IMAGE PROCESSING AND RELATED TOPICS. IT IS ARRANGED INTO THREE SECTIONS: CLASSIFICATION BY LAST NAME OF FIRST AUTHOR; CLASSIFICATION BY YEAR OF PUBLICATION. OVER 1,000 ENTRIES ARE INCLUDED IN THE BIBLIOGRAPHY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 745 965 4/1
LOWELL TECHNOLOGICAL INST RESEARCH FOUNDATION MASS

DIGITAL IONOSONDE FOR MONITORING THE IONOSPHERE. (U)

DESCRIPTIVE NOTE: FINAL SCIENTIFIC REPT. 28 MAR 69-31 JUL 71,
MAY 72 281P BIBL,KLAUS ;PATENAUDE,JOSEPH A. ;REINISCH,BODO W. ;
REPT. NO. LTIRF-341/IP
CONTRACT: F19628-69-C-0155
PROJ: AF-5631, AF-4643
TASK: 563111, 464301
MONITOR: AFCRL 71-0507

UNCLASSIFIED REPORT

DESCRIPTORS: (*ATMOSPHERIC SOUNDING, DATA PROCESSING), (*IONOSPHERE, ATMOSPHERIC SOUNDING), METEOROLOGICAL INSTRUMENTS, DATA TRANSMISSION SYSTEMS, RECORDING SYSTEMS, INTEGRATED CIRCUITS, DIGITAL SYSTEMS, WIRING DIAGRAMS (U)
IDENTIFIERS: SCHEMATIC DIAGRAMS, *IONOSONDES (U)

MANY YEARS EXPERIENCE IN IONOSPHERIC PHYSICS AS WELL AS DESIGN AND OPERATION OF IONOSPHERIC SOUNDERS WERE THE BASIS FOR CREATION OF THE DIGISONDE 128. BY IMPLEMENTING THE LATEST ACHIEVEMENTS IN STATE OF THE ART TECHNOLOGY AND RECENT ADVANCEMENTS IN SOLID STATE ANALOG COMPONENTS AND DIGITAL ARRAYS, A TECHNICALLY SOPHISTICATED IONOSONDE HAS BEEN REALIZED. ALTHOUGH THE MAIN FEATURE OF THE DIGISONDE 128 IS THE CONTINUOUS MONITORING OF THE IONOSPHERE BY VERTICAL PULSE SOUNDING IN A LARGE FREQUENCY RANGE, IT HAS MANY FEATURES WHICH MAKE IT THE MOST VERSATILE INSTRUMENT OF ITS KIND. CONTINUOUS RECORDING OF IONOSPHERIC ABSORPTION AT MANY FREQUENCIES MAKES THIS SOUNDER A UNIQUE GEOPHYSICAL TOOL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 746 110 9/2
NAVAL RESEARCH LAB WASHINGTON D C

SIMULATION OF AADC(ADVANCED AVIONIC DIGITAL COMPUTER) PAGE REPLACEMENT ALGORITHMS. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,
JUL 72 14P SMITH,WILLIAM R. ;
REPT. NO. NRL-MR-2464
PROJ: NRL-B02-06, WF15-241-601

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTER PROGRAMMING, COMPUTERS), (*NAVAL AIRCRAFT, COMPUTERS), ALGORITHMS, DIGITAL SYSTEMS, SIMULATION, NAVIGATION COMPUTERS (U)
IDENTIFIERS: AADC(ADVANCED AVIONIC DIGITAL COMPUTERS), ADVANCED AVIONICS DIGITAL COMPUTER, *AVIONICS (U)

PAGE REPLACEMENT ALGORITHMS HAVE BEEN SIMULATED TO AID IN MAKING A CHOICE FROM AMONG THOSE PROPOSED FOR THE ADVANCED AVIONIC DIGITAL COMPUTER (AADC) PROCESSING ELEMENT. AN E-2B PROGRAM MODEL AND A STATISTICAL PAGE REFERENCE GENERATOR WERE USED TO EVALUATE PERFORMANCE OF THESE REPLACEMENT SCHEMES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 754 060 1779
NAVAL RESEARCH LAB WASHINGTON D C

DESIGN CONSIDERATIONS OF A PROGRAMMABLE PREDETECTION DIGITAL SIGNAL PROCESSOR FOR RADAR APPLICATIONS. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,
DEC 72 57P SHAY,BARRY P. ;
REPT. NO. NRL-7455
PROJ: NRL-602-10, XF53-241
TASK: XF53-241-003

UNCLASSIFIED REPORT

DESCRIPTORS: (*RADAR SIGNALS, DATA PROCESSING), (*MOVING TARGET INDICATORS, DATA PROCESSING), RADAR EQUIPMENT, DIGITAL SYSTEMS, LOGIC CIRCUITS, COMPUTER PROGRAMMING, GRAPHICS, ALGORITHMS, PULSE COMPRESSION (U)
IDENTIFIERS: MICROPROGRAMMING, SIGNAL PROCESSING, FOURIER TRANSFORMATION, GRAPHS, DIGITAL FILTERS, FAST FOURIER TRANSFORM (U)

SIGNAL PROCESSING TASKS NORMALLY ENCOUNTERED IN A RADAR SYSTEM, SUCH AS PULSE COMPRESSION AND MOVING TARGET INDICATION, ARE DEFINED IN TERMS OF RECURSIVE AND NONRECURSIVE DIGITAL FILTERING AND THE DISCRETE FOURIER TRANSFORM. ANALYSIS OF THESE ALGORITHMS REVEALS THAT THE GENERAL SECOND-ORDER RECURSIVE FILTER AND THE FAST FOURIER TRANSFORM BUTTERFLY ARE KERNELS WHICH SHOULD BE EFFICIENTLY EXECUTED BY A RADAR ARITHMETIC PROCESSING ELEMENT (RAPE). THIS ELEMENT WOULD BE THE ARITHMETIC UNIT OF AN ENVISIONED PROGRAMMABLE SIGNAL PROCESSOR. WITH ASSOCIATED MEMORY AND A SMALL MICROPROGRAMMED CONTROL UNIT, THIS ELEMENT COULD BE AN INDEPENDENT, GENERAL-PURPOSE SIGNAL PROCESSOR. AS SUCH, IT MAY REPRESENT AN OFF-THE-SHELF MODULE CAPABLE OF REPLACING A WIDE RANGE OF EXISTING SPECIAL-PURPOSE HARDWARE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 757 814 4/2
STANFORD RESEARCH INST MENLO PARK CALIF

FURTHER DEVELOPMENT OF OBJECTIVE METHODS FOR REGISTERING LANDMARKS AND DETERMINING CLOUD MOTIONS FROM SATELLITE DATA. (U)

DESCRIPTIVE NOTE: SCIENTIFIC REPT.,
SEP 72 76P WOLF,DANIEL E. ;ENDLICH, ROY M. ;HALL,DAVID J. ;
CONTRACT: N62306-71-C-0068
PROJ: SRI-1005-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED OCT 71, AD-740 324.

DESCRIPTORS: (*CLOUDS, PHOTOINTERPRETATION), (*METEOROLOGICAL SATELLITES, DATA PROCESSING), WEATHER FORECASTING, DIGITAL SYSTEMS, PICTURES, PATTERN RECOGNITION, TEMPLATES (U)
IDENTIFIERS: ATS-3 SATELLITE, SPACEBORNE PHOTOGRAPHY, COMPUTER PRINTOUTS, DIGITAL PICTURES (U)

THE REPORT DESCRIBES CONTINUING RESEARCH TO DEVELOP AUTOMATIC METHODS FOR MEASURING CLOUD MOTIONS FROM DIGITAL BRIGHTNESS DATA OBTAINED BY GEOSYNCHRONOUS SATELLITES. A SERIES OF COMPUTER PROGRAMS ARE DESCRIBED THAT REGISTER SUCCESSIVE PICTURES USING LANDMARKS, NORMALIZE BRIGHTNESS FOR CHANGING ILLUMINATION, LOCATE BRIGHTNESS CENTERS (TRACERS) FOR GROUPS OF CLOUD ELEMENTS, MATCH BRIGHTNESS CENTERS IN PAIRS TO OBTAIN A SMOOTH FIELD OF MOTIONS, AND TRANSFORM THE MOTIONS FROM TAPE COORDINATES TO EARTH COORDINATES. THE METHODS ARE ECONOMICAL COMPUTATIONALLY SINCE COORDINATE TRANSFORMATIONS ARE MADE ONLY TO THE CLOUD MOTION VECTORS OBTAINED, AND NOT TO THE MILLIONS OF BRIGHTNESS ELEMENTS OF AN IMAGE. ALSO, A DATA COMPRESSION IS ACCOMPLISHED BY REPRESENTING GROUPS OF BRIGHT POINTS BY THEIR CENTERS PLUS DESCRIPTORS OF THE GROUP SHAPE. (AUTHOR MODIFIED ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 758 363 5/9 9/2 17/9
NAVAL TRAINING EQUIPMENT CENTER ORLANDO FLA

DIGITAL RADAR LANDMASS SIMULATION. (U)

DESCRIPTIVE NOTE: INTERIM REPT. 1969-1972,
FEB 73 123P BROWN,CRAIG E. ;GRANT,
ALEXANDER J. ;
REPT. NO. NAVTRAEQUIPC-IH-196
PROJ: NAVTRAEQUIPCEN-7884-10

UNCLASSIFIED REPORT

DESCRIPTORS: (*SIMULATORS, RADAR REFLECTIONS),
(*TRAINING DEVICES, RADAR), DIGITAL SYSTEMS, SIMULATION,
COMPUTER PROGRAMS, DISPLAY SYSTEMS, RADAR EQUIPMENT,
COMPUTERS, TERRAIN (U)

THE PURPOSE OF THE IN-HOUSE RADAR LANDMASS SIMULATION (RLMS) PROJECT IS TO DEVELOP A RESEARCH TOOL FOR STUDY IN THE AREA OF DIGITAL RADAR TRAINING DEVICES. THE TOOL SHOULD HELP ONE TO DETERMINE AN OPTIMUM SPECIFICATION FOR PROCURED HARDWARE AND TO DEFINE THE TRAINING REQUIREMENTS, OFFER A MEANS OF EVALUATING PROPOSED HARDWARE SCHEMES THROUGH SIMULATION OF THE PROPOSED SCHEMES, AND BE CAPABLE OF PRODUCING A SIMULATED RADAR SCOPE DISPLAY IN SIMULATED REAL-TIME. FINALLY, THE RESEARCH TOOL SHOULD BE EASILY CHANGEABLE TO FACILITATE EXPERIMENTATION. THE REPORT CONTAINS A GENERAL DESCRIPTION OF THE HARDWARE AND SOFTWARE WHICH HAS BEEN DEVELOPED, WITH EMPHASIS ON THE RESULTS OBTAINED. THE APPENDICES CONTAIN DETAILED SCHEMATICS FOR THE HARDWARE, FLOWCHARTS AND LISTINGS FOR THE SOFTWARE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 759 418 9/4 17/2
MICHIGAN UNIV ANN ARBOR COOLEY ELECTRONICS LAB

DIGITAL COMMUNICATIONS: DETECTORS AND ESTIMATORS FOR THE TIME-VARYING CHANNEL WITH INTERSYMBOL INTERFERENCE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 73 509P MESSERSCHMITT,DAVID G. ;
REPT. NO. TR-222, 01058G-1-T
CONTRACT: N66001-72-C-0073

UNCLASSIFIED REPORT

DESCRIPTORS: (•PULSE COMMUNICATIONS, •INFORMATION THEORY), DIGITAL SYSTEMS, PULSE CODE MODULATION, DECODING, STOCHASTIC PROCESSES, BAND PASS FILTERS, WHITE NOISE, RANDOM VARIABLES, DECISION THEORY, ALGORITHMS, MATHEMATICAL MODELS, DYNAMIC PROGRAMMING, SIMULATION (U)
IDENTIFIERS: STATISTICAL PROCESSES, MAXIMUM LIKELIHOOD ESTIMATION, •INTERSYMBOL INTERFERENCE, TIME VARYING SYSTEMS, VITERBI DECODING, COMPUTERIZED SIMULATION, DATA TRANSMISSION SYSTEMS, •DIGITAL COMMUNICATION SYSTEMS (U)

RECEIVERS ARE DESIGNED FOR A PULSE AMPLITUDE MODULATION DIGITAL COMMUNICATION SYSTEM WITH ADDITIVE WHITE GAUSSIAN NOISE AND INTERSYMBOL INTERFERENCE. CONSIDERED ALONG WITH THE TRANSVERSAL FILTER RECEIVER ARE THE BIT DETECTOR AND BLOCK DETECTOR. THE BIT DETECTOR MINIMIZES THE PROBABILITY OF ERROR IN THE DECISION ON EACH DATA DIGIT; THE BLOCK DETECTOR MINIMIZES THE PROBABILITY OF ERROR IN MAKING A JOINT DECISION ON THE ENTIRE SEQUENCE OF DATA DIGITS. THE THREE RECEIVERS ARE COMPARED IN NONITERATIVE FORM ON THE FIXED, KNOWN CHANNEL. THE SAMPLED AUTOCORRELATION FUNCTION OF THE BASIC PAM PULSE WAVEFORM DETERMINES THE SIGNAL-SPACE GEOMETRY AND, ALONG WITH THE NOISE SPECTRAL DENSITY, THE ERROR PROBABILITY OF THE THREE RECEIVERS. THE OUTPUT OF A BANK OF MATCHED FILTERS, ONE MATCHED TO EACH TRANSLATE OF THE BASIC PAM WAVEFORM, CONSTITUTES A SUFFICIENT STATISTIC FOR THE REALIZATION OF ALL THREE RECEIVERS. (AUTHOR MODIFIED ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 760 057 9/4
CALIFORNIA UNIV LOS ANGELES SCHOOL OF ENGINEERING AND APPLIED SCIENCE

NUMERICAL STUDY OF MINIMUM PROBABILITY OF ERROR EXPRESSION IN A DIGITAL COMMUNICATION SYSTEM WITH INTERSYMBOL INTERFERENCE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JAN 73 48P COLLIER,JAMES WARREN ;
REPT. NO. UCLA-ENG-7327, TR-1
CONTRACT: N00014-69-A-0200-4043
PROJ: NR-042-285

UNCLASSIFIED REPORT

DESCRIPTORS: (•INFORMATION THEORY, PULSE COMMUNICATIONS), TRANSFER FUNCTIONS, TRANSCENDENTAL FUNCTIONS, NOISE, PROBABILITY, ERRORS, LOW PASS FILTERS, PARTIAL DIFFERENTIAL EQUATIONS, NUMERICAL ANALYSIS, COMPUTER PROGRAMS (U)
IDENTIFIERS: NUMERICAL QUADRATURE, FORTRAN, •INTERSYMBOL INTERFERENCE, •DIGITAL COMMUNICATION SYSTEMS (U)

THE REPORT DESCRIBES THE APPLICATION OF AN ITERATIVE METHOD FOR SOLVING A SET OF SIMULTANEOUS NON-LINEAR EQUATIONS WHICH MINIMIZES THE PROBABILITY OF ERROR IN A DIGITAL COMMUNICATION SYSTEM WITH INTERSYMBOL INTERFERENCE. THE FORM OF THE OPTIMUM LINEAR RECEIVER FOR SUCH A SYSTEM AS WELL AS THE EQUATIONS TO BE SOLVED ARE DESCRIBED IN DETAIL IN THE INTRODUCTION. THE EQUATIONS ARE APPROXIMATED BY A NUMERICAL QUADRATURE FORMULA. IN THE FOLLOWING SECTION, AN ITERATIVE METHOD FOR THE SOLUTION OF THE APPROXIMATING EQUATIONS IS DESCRIBED. THE EQUATIONS ARE PUT INTO A SUITABLE FORM FOR APPLYING THE METHOD; A STARTING VALUE IS GIVEN. THE THIRD SECTION CONSISTS OF AN APL COMPUTER PROGRAM WHICH USES THE METHOD AND A PROGRAM DESCRIPTION. IN THE LAST SECTION, THE TECHNIQUE IS ILLUSTRATED WITH FOUR EXAMPLES WITH VARYING DEGREES OF INTERSYMBOL INTERFERENCE. THE PROBABILITY OF ERROR FOR THE OPTIMUM LINEAR RECEIVER IS PLOTTED AS A FUNCTION OF SIGNAL TO NOISE RATIO OF THE 'DESIRED' SIGNAL. THE APPENDIX CONTAINS A BRIEF DISCUSSION OF THE ERROR INCURRED IN USING THE QUADRATURE FORMULA.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 762 521 1/3
HONEYWELL INC MINNEAPOLIS MINN GOVERNMENT AND AERONAUTICAL PRODUCTS DIV

NAVY DIGITAL FLIGHT CONTROL SYSTEM DEVELOPMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 SEP 71-30 SEP 72,
DEC 72 445P BOROW,M. S. ;GAABO,R. O.
;HENDRICK,P. C. ;KONAR,A. F. ;LAHN,T. G.
;
REPT. NO. 21857-FR
CONTRACT: N62269-72-C-0141

UNCLASSIFIED REPORT

DESCRIPTORS: (*FLIGHT CONTROL SYSTEMS, DIGITAL SYSTEMS), AUTOMATIC PILOTS, AUTOMATION, COMPUTER PROGRAMMING, SUBROUTINES, SIMULATION, NAVAL AIRCRAFT (U)
IDENTIFIERS: HDC-201 COMPUTERS (U)

A 12-MONTH ENGINEERING STUDY WAS CONDUCTED TO DEFINE A DIGITAL FLIGHT CONTROL SYSTEM CAPABLE OF PERFORMING PILOT-ASSIST (AUGMENTATION) AND PILOT-RELIEF (AUTOPILOT) FUNCTIONS. BASIC CONTROL LAWS WERE SYNTHESIZED AND ANALYZED TO SATISFY CURRENT AND PROJECTED REQUIREMENTS FOR HIGH-PERFORMANCE NAVAL AIRCRAFT. SOFTWARE ANALYSIS PROCEDURES WERE APPLIED TO DETERMINE SAMPLE RATES, WORD LENGTHS, AND MEMORY CAPACITY. A REDUNDANCY AND MONITORING APPROACH WAS IDENTIFIED TO FURTHER ASSESS COMPUTER CHARACTERISTICS. IMPLEMENTATION OPTIONS IN AREAS OF PROCESSOR STRUCTURE, INPUT/OUTPUT, AND INSTRUCTION REPERTOIRE WERE RESOLVED. REPRESENTATIVE PORTIONS OF THE OVERALL FLIGHT CONTROL SYSTEM WERE PROGRAMMED ON A SMALL AIRBORNE COMPUTER (HDC-201) AND VERIFIED BY OPEN- AND CLOSED-LOOP TESTING IN CONJUNCTION WITH AN ANALOG SIMULATION OF THE AIRCRAFT. A PARTIAL SYSTEM SPECIFICATION WAS PREPARED REFLECTING OVERALL STUDY RESULTS.
(MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 763 267 17/2
ARMY WAR COLL CARLISLE BARRACKS PA

THE APPLICATION OF ADP TO FIELD ARMY COMMUNICATIONS SYSTEM CONTROL DURING THE TIME FRAME, 1972-1978. (U)

DESCRIPTIVE NOTE: STUDENT ESSAY,
JUN 73 22P BURNS,GEORGE T. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMMUNICATION SYSTEMS, *ARMY), (*DATA PROCESSING, COMMUNICATION SYSTEMS), AUTOMATION, DIGITAL SYSTEMS, COMMAND AND CONTROL SYSTEMS, COMBAT SURVEILLANCE (U)

THE BASIC QUESTION IS WHAT IMPACT WOULD THE APPLICATION OF ADP HAVE UPON THE SIGNAL BRIGADE COMMANDER'S ABILITY TO CONTROL THE COMMUNICATIONS SYSTEMS AND CIRCUITS OF A DEPLOYED FIELD ARMY. THE FUTURE USE OF AUTOMATION IN TACTICAL COMMUNICATIONS WAS CLOSELY EXAMINED. INFORMATION AND DATA WERE COLLECTED FROM EXISTING LITERATURE, REPORTS AND PERSONAL INTERVIEWS WITH COMBAT-EXPERIENCED COMMUNICATORS. (MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 763 326 20/1 17/1 9/1
NAVAL UNDERSEA CENTER SAN DIEGO CALIF

ACOUSTIC SIGNAL DATA ANALYSIS AND
CONVERSION SYSTEM (ASDACS).

JUN 73 79P SCHUMACHER,G. P. ;
REPT. NO. NUC-TP-354
PROJ: SF101-03, R3651
TASK: R132

UNCLASSIFIED REPORT

DESCRIPTORS: (*ACOUSTIC SIGNALS, *DATA PROCESSING), SPECTRUM ANALYZERS, ANALOG-TO-DIGITAL CONVERTERS, CONTROL SYSTEMS, DISPLAY SYSTEMS, ELECTRONIC EQUIPMENT, DIGITAL SYSTEMS, MAGNETIC TAPE, COMPUTER PROGRAMMING (
IDENTIFIERS: CDC 1700 COMPUTERS, *SIGNAL PROCESSING, FORTRAN, FORTRAN 4 PROGRAMMING LANGUAGE, COMPUTERS (

THE PURPOSE OF THIS REPORT IS TO PROVIDE AN UP-TO-DATE AND COMPREHENSIVE DESCRIPTION OF THE CHARACTERISTICS AND CAPABILITIES OF THE ACOUSTIC SIGNAL DATA ANALYSIS AND CONVERSION SYSTEM (ASDACS). THE DESCRIPTION INCLUDES BOTH HARDWARE AND SOFTWARE SO THAT THE APPLICABILITY OF ASDACS TO PROJECT REQUIREMENTS CAN BE DETERMINED. THE SYSTEM'S HARDWARE IS DIVIDED INTO FOUR SECTIONS: SIGNAL CONDITIONING, ANALOG AND DIGITAL INTERFACE WITH THE SYSTEM, CONTROL AND DISPLAY, AND DIGITAL PROCESSING. SOME OF THE MORE IMPORTANT APPLICATIONS ROUTINES ARE DESCRIBED TO INDICATE THE VARIETY AND GENERAL-PURPOSE CAPABILITY OF THE AVAILABLE PROGRAMS. THE PROGRAMS ARE DIVIDED INTO TWO TYPES: INTERACTIVE DEMAND FUNCTIONS WHICH ALLOW THE OPERATOR TO INTERACTIVELY CONTROL ASDACS FROM A CONTROL CONSOLE AND BATCH-PROCESS APPLICATIONS WHICH ARE EXECUTED BY THE OPERATOR FROM THE COMMENT DEVICE (TELETYPE). (AUTHOR) (

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 763 599 1/4 9/2
ILLINOIS UNIV URBANA COORDINATED SCIENCE LAB

THE DESIGN OF AN INTEGRATED AIRCRAFT INSTRUMENTATION DISPLAY SYSTEM UTILIZING A PLASMA DISPLAY/MEMORY UNIT, (U)

MAY 73 98P MCMAHAN,MICHAEL LEWIS ;
REPT. NO. R-613, UILU-ENG-73-2215
CONTRACT: N00014-67-A-0305-0021, DAAB07-67-C-0199

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRCRAFT EQUIPMENT, DISPLAY SYSTEMS), (*SCREENS(DISPLAYS), PLASMA MEDIUM), (*INPUT OUTPUT DEVICES, SCREENS(DISPLAYS)), (*DATA PROCESSING, AIRBORNE), DESIGN, DIGITAL SYSTEMS, LOGIC CIRCUITS, WIRING DIAGRAMS, CONTROL SEQUENCES, ALGORITHMS, PERFORMANCE(ENGINEERING), THESES (U)
IDENTIFIERS: *AVIONICS, *PLASMA DISPLAY PANELS, SCHEMATIC DIAGRAMS, FLAT PANEL DISPLAYS (U)

BACKGROUND INFORMATION THAT WAS USED AS THE BASIS FOR THE DESIGN SPECIFICATION OF A GENERALIZED DISPLAY PROCESSOR IS PRESENTED. INCLUDED ARE A REVIEW OF STATE OF THE ART AIRBORNE COMPUTER SYSTEMS, A STUDY OF MODERN AIRCRAFT INFORMATION DISPLAY PHILOSOPHY, AND FINALLY THE DEVELOPMENT OF A GENERALIZED INSTRUMENTATION SYSTEM ARCHITECTURE. A DIGITAL SYSTEMS MODEL FOR FLAT-PANEL MATRIX DISPLAYS WITH INHERENT MEMORY IS INTRODUCED AND ONE SUCH DISPLAY TECHNOLOGY, THE PLASMA DISPLAY/MEMORY PANEL IS DESCRIBED. THE DESIGN OF A GENERALIZED DISPLAY PROCESSOR WHICH WILL INTERFACE WITH THE AIRBORNE CPU AND A SEMI-PARALLEL PLASMA PANEL CONFIGURATION IS ALSO DESCRIBED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 72

AD- 764 353 9/2 14/5
ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N Y

DIA GRAPHICS TESTBED SYSTEM.

DESCRIPTIVE NOTE: TECHNICAL REPT. AUG 71-DEC 72,
MAY 73 153P COLE,JACKSON T. ;ANDERSON
THOMAS J. ;METZGER,RICHARD A. ;
REPT. NO. RADC-TR-73-50
PROJ: AF-5597

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING, *PHOTOINTERPRETAT
GRAPHICS, DIGITAL SYSTEMS, TELEVISION DISPLAY SYS
COMPUTER PROGRAMMING, INSTRUCTION MANUALS, FLOW
CHARTING
IDENTIFIERS: MINICOMPUTERS, PDP-8 COMPUTERS,
*COMPUTERS, *GRAPHICS, *INTERACTIONS, *COMPUTERS,
*GRAPHICS

THE REPORT SUMMARIZES THE EFFORT EXPENDED FOR TH
DESIGN, IMPLEMENTATION, AND TESTING OF AN INTERA
GRAPHICS TESTBED TO BE USED IN THE EVALUATION OF
GRAPHICS APPLICATIONS FOR PHOTO INTERPRETATION.
SYSTEM WAS CONFIGURED USING A MINI-COMPUTER, DIG
TV GRAPHICS SYSTEM, TV CAMERA VIDEO SYSTEM, BULK
STORAGE, AND VARIOUS OPERATOR INTERACTIVE DEVICE
BY USING THE SYSTEM AN OPERATOR CAN GENERATE A
GRAPHIC REPRESENTATION OF CRITICAL DATA FROM
PHOTOGRAPHY, USING THE ACTUAL PHOTOGRAPH, AS VIE
BY THE TV CAMERA AS A BACKGROUND. THESE GRAPHIC
OVERLAYS CAN BE STORED, COMBINED WITH TEXT INTO
REPORT, RECALLED LATER FOR UPDATE, OR OUTPUT FOR
HARDCOPY. THE TESTBED CONCEPT ALLOWS FOR COLLECT
OF CRITICAL FUNCTIONAL AND ECONOMIC DATA PRIOR T
COMMITTING TO A FULL OPERATIONAL SYSTEM. THE
PROJECT WAS JOINT EFFORT INVOLVING RADC (IS),
ARPA AND THE DEFENSE INTELLIGENCE AGENCY.
THE REPORT HAS BEEN WRITTEN IN SUFFICIENT DETAIL
SERVE AS BOTH AN OPERATORS MANUAL AND A REPORT O
PROGRESS IN DEVELOPING A GRAPHICS TESTBED SYSTEM
DIA. (AUTHOR)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMO7

AD- 767 568 17/2 9/2
TELCOM INC MCLEAN VA

PROGRAMMABLE FRONT-END PROCESSORS APPLIED TO DIGITAL DATA COMMUNICATIONS SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
JUL 73 119P WOOD,PHILIP C. ;RIVIERE, CHARLES ;
CONTRACT: F30602-72-C-0419
PROJ: AF-4594
TASK: 459410
MONITOR: RADC TR-73-183

UNCLASSIFIED REPORT

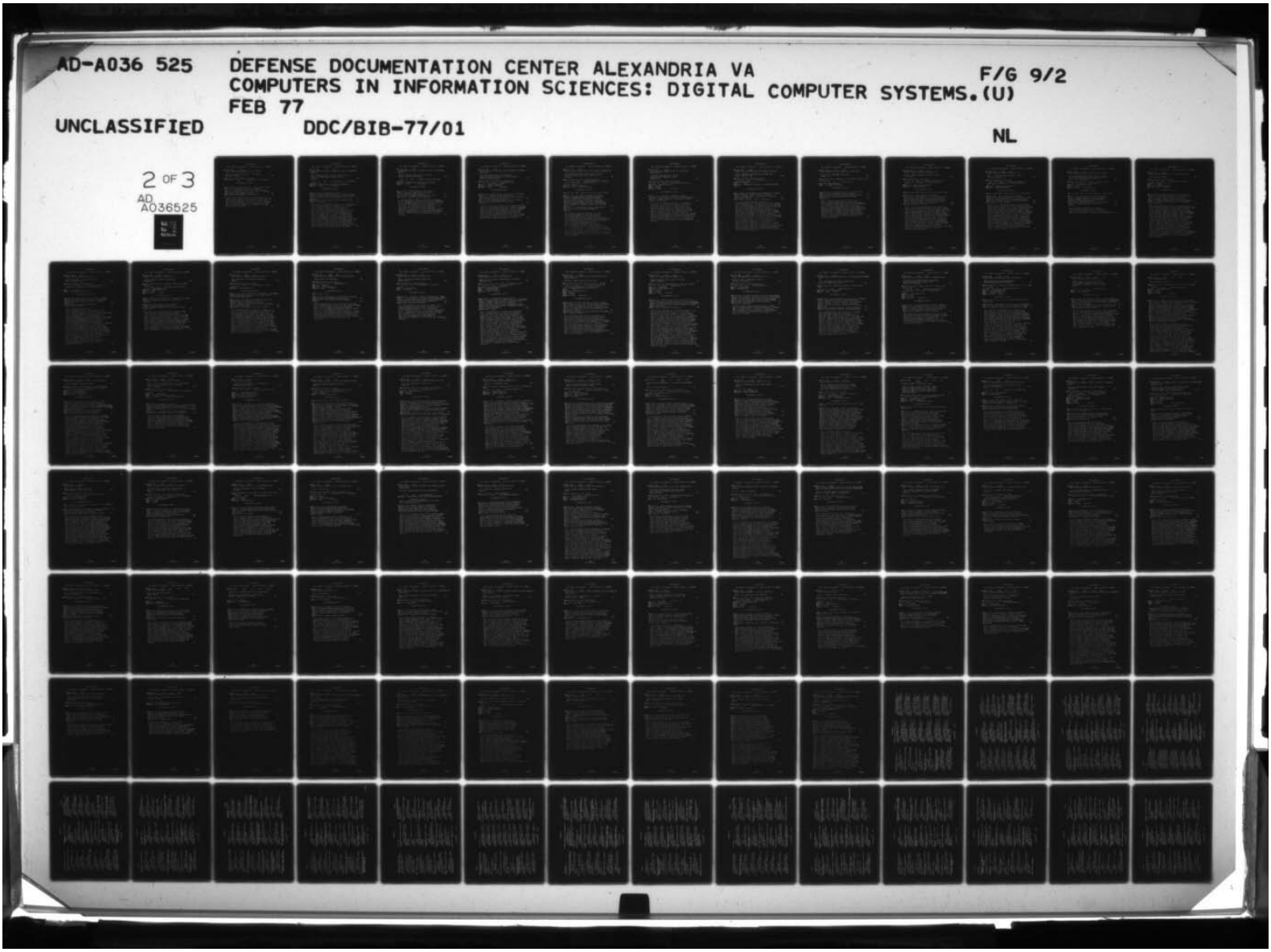
DESCRIPTORS: (*DATA TRANSMISSION SYSTEMS, *DATA PROCESSING), DESIGN, INFORMATION THEORY, SYSTEMS ENGINEERING, COST EFFECTIVENESS, SIMULATION, PULSE COMMUNICATIONS, DIGITAL SYSTEMS (U)
IDENTIFIERS: PULSE COMMUNICATION, IBM 360/65 COMPUTERS, IBM 360/50 COMPUTERS, TELECOMMUNICATION, DIGITAL COMMUNICATION SYSTEMS (U)

THE REPORT COVERS INVESTIGATION OF TYPICAL DATA COMMUNICATIONS LOADINGS AND FACILITY UTILIZATIONS DEVELOPED IN SYSTEMS EMPLOYING THE IBM-360/50 CLASS OF COMPUTERS WITH HARDWIRED COMMUNICATIONS CONTROLLERS AND PROGRAMMABLE FRONT-END PROCESSORS. SIMULATION TECHNIQUES WERE USED TO MODEL APPLICABLE CONFIGURATIONS AND TRAFFIC DISTRIBUTIONS. COMPARISONS OF IBM-360/50 WITH HARDWIRED COMMUNICATIONS CONTROLLERS, UPGRADED CONFIGURATIONS OF IBM-360/65 WITH HARDWIRED COMMUNICATIONS CONTROLLERS AS WELL AS IBM-360/50 WITH PROGRAMMABLE FRONT-END PROCESSORS ARE MADE. THE LATTER IS SHOWN TO BE THE MOST COST-EFFECTIVE APPROACH FOR DATA COMMUNICATIONS SYSTEMS. (AUTHOR) (U)

AD-A036 525 DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA F/G 9/2
COMPUTERS IN INFORMATION SCIENCES: DIGITAL COMPUTER SYSTEMS.(U)
FEB 77

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2 OF 3
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A036525



DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 769 434 17/2.1
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

SELECTIVE CALLING DEVICE FOR THE MOBILE MARITIME SERVICE. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
SEP 73 43P MIPKISS,VERNON CHRISTOPHER ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMMUNICATION AND RADIO SYSTEMS, SHIP TO SHORE), (*SIGNALS, SELECTION), DIGITAL SYSTEMS, AUTOMATION, DIGITAL COMPUTERS, COMPUTER PROGRAMS, COMMUNICATION EQUIPMENT, WARNING SYSTEMS, AUTOMATIC, RADIO SIGNALS, THESES (U)
IDENTIFIERS: *SELECTIVE CALLING SYSTEMS (U)

INTEL'S MCS-4 MICRO COMPUTER SET WAS SELECTED TO IMPLEMENT A DIGITAL SELECTIVE CALLING DEVICE FOR USE BY THE MOBILE MARITIME SERVICE. THE SYSTEM WILL GENERATE AND RECEIVE A STANDARDIZED CALLING MESSAGE. UPON RECEIPT OF A VALID CALLING MESSAGE, INTENDED FOR THE USER, THE SYSTEM WILL ACTIVATE VISUAL AND AUDIBLE ALARMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 770 634 4/1 4/2
CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF COMPUTER SCIENCE

SOME OBSERVATIONS ON SEMICONDUCTOR TECHNOLOGY AND THE ARCHITECTURE OF LARGE DIGITAL MODULES. (U)

AUG 73 26P FULLER,SAMUEL H. ;SIEWIOREK, DANIEL P. ;
CONTRACT: F44620-73-C-0074, ARPA ORDER-2466
MONITOR: AFOSR TR-73-2073

UNCLASSIFIED REPORT

DESCRIPTORS: *MODULES(ELECTRONICS), *SEMICONDUCTOR DEVICES, *DIGITAL COMPUTERS, *LOGIC CIRCUITS, METAL OXIDE SEMICONDUCTORS, MINICOMPUTERS, MULTIPLE OPERATION, DIGITAL SYSTEMS, COMPUTERS, SYMPOSIA (U)
IDENTIFIERS: LOGIC DESIGN, MULTIPROCESSORS, ARPA COMPUTER NETWORK (U)

THE REPORT SUMMARIZES THE DISCUSSION OF A WORKSHOP ON THE ARCHITECTURE AND APPLICATION OF DIGITAL MODULES THAT WAS HELD ON JUNE 7-8, 1973 AT CARNEGIE-MELLON UNIVERSITY. THE PURPOSE OF THE WORKSHOP WAS TO IDENTIFY THE MAJOR INFLUENCES THAT CONTINUING ADVANCEMENTS IN SEMICONDUCTOR TECHNOLOGY WILL HAVE ON THE NEXT GENERATION OF DIGITAL SYSTEMS. THE WORKSHOP, AND THIS REPORT, CAN BE APPROXIMATELY PARTIONED INTO THREE MAIN TOPICS: DISCUSSION OF CURRENT REGISTER-TRANSFER LEVEL MODULE SETS AND WHAT CAN BE LEARNED FROM THEIR DEVELOPMENT AND USE; THE STATE OF SEMICONDUCTOR TECHNOLOGY AND ITS CURRENT TRENDS; AND FINALLY, DISCUSSION OF CURRENT EFFORTS TO DEFINE OR BUILD COMPUTER STRUCTURES THAT MAY BECOME PROTOTYPES OF THE NEXT GENERATION OF DIGITAL SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 770 636 9/2
CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF COMPUTER SCIENCE

DIGITAL HARDWARE FOR A HYBRID OPTICAL/ DIGITAL COMPUTER INTERFACE, (U)

SEP 73 65P CASASENT,DAVID ;STERLING, WARREN ;

CONTRACT: F44620-73-C-0074, ARPA ORDER-2466
MONITOR: AFOSR TR-73-2074

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING, *PROCESSING EQUIPMENT, HYBRID COMPUTERS, INTERFACES, MINICOMPUTERS, DIGITAL SYSTEMS (U)
IDENTIFIERS: *OPTICAL DATA PROCESSING, PDP-11 COMPUTERS, COMPUTERS SYSTEMS HARDWARE (U)

AN OPTICAL/DIGITAL INTERFACE FOR HYBRID OPTICAL/ DIGITAL PROCESSOR HAS BEEN DESIGNED AND IMPLIMENTED AT THE REGISTER TRANSFER LEVEL. AN OVERALL VIEW OF THE HYBRID PROCESSOR IS GIVEN FOLLOWED BY A DISCUSSION OF THE PROCESSING REQUIREMENTS OF THE INTERFACE. THE INTERFACE HARDWARE IS THEN PRESENTED IN DEPTH WITH A SHORT INTRODUCTION TO THE REGISTER TRANSFER LEVEL OF DESIGN AND ASSOCIATED HARDWARE COMPONENTS. FINALLY, EXPERIMENTAL RESULTS ACHIEVED WITH THE HYBRID PROCESSOR ARE INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 771 492 9/4
AEROSPACE CORP EL SEGUNDO CALIF ENGINEERING SCIENCE OPERATIONS

PARAMETER ESTIMATION FOR AN ADAPTIVE INSTRUMENTATION OF HALL'S OPTIMUM, DIGITAL, IMPULSE NOISE RECEIVER. (U)

DESCRIPTIVE NOTE: REPT. FOR APR-JUN 73,
AUG 73 27P NIRENBERG,L. M. ;
REPT. NO. TR-0074(4901-02)-3
CONTRACT: F04701-73-C-0074
MONITOR: SAMSO TR-73-365

UNCLASSIFIED REPORT

DESCRIPTORS: *INFORMATION THEORY, *DIGITAL SYSTEMS, *RECEIVERS, *NOISE, SIGNAL PROCESSING, ESTIMATES, PROBABILITY DENSITY FUNCTIONS, COMPUTER APPLICATIONS, VERY LOW FREQUENCY (U)
IDENTIFIERS: PARAMETER ESTIMATION, NEWTON METHOD, MAXIMUM LIKELIHOOD ESTIMATION, ROOTS OF EQUATIONS (U)

NEWTON'S METHOD FOR ROOT-FINDING IS SHOWN TO BE AN EFFECTIVE ALGORITHM FOR COMPUTING MAXIMUM LIKELIHOOD ESTIMATES OF THE BIAS PARAMETER IN HALL'S OPTIMUM, DIGITAL, IMPULSE NOISE RECEIVER. USE OF A BIAS ESTIMATOR ALLOWS THE RECEIVER TO BE ADAPTIVELY INSTRUMENTED. A SIMULATION INDICATES THAT THE NUMBER OF INDEPENDENT SAMPLES OF THE IMPULSE NOISE AS MODELED BY HALL, SHOULD BE AROUND 20,000 FOR SATISFACTORY PARAMETER ESTIMATES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 771 736 1/3
GENERAL DYNAMICS FORT WORTH TEX CONVAIR AEROSPACE DIV

A CONCEPTUAL DEFINITION STUDY FOR A DIGITAL AVIONICS INFORMATION SYSTEM (APPROACH I). VOLUME I. (U)

DESCRIPTIVE NOTE: FINAL REPT. FEB-JUL 73, OCT 73 49P BOOTON,WILLIAM C. ;DAGGETT, DAN H. ;GAFFIN,H. D. ;CAMPBELL,C. D. ; ANDERSON,W. H. ;
CONTRACT: F33615-73-C-1244
MONITOR: AFAL TR-73-300-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-771 755.

DESCRIPTORS: *AVIONICS, *INFORMATION SYSTEMS, DIGITAL SYSTEMS, DISPLAY SYSTEMS, INTEGRATED SYSTEMS, INFORMATION PROCESSING, TACTICAL INTELLIGENCE, TACTICAL AIR SUPPORT, TACTICAL AIRCRAFT, FLIGHT CONTROL SYSTEMS, MULTIPLEXING, DATA TRANSMISSION SYSTEMS, MODULAR CONSTRUCTION, CONTROL SYSTEMS, INTERFACES, COMPUTERS, MULTIPLE OPERATION (U)
IDENTIFIERS: DAIS(DIGITAL AVIONICS INFORMATION SYSTEMS), DIGITAL AVIONICS INFORMATION SYSTEMS (U)

THE REPORT CONTAINS THE RESULTS OF A STUDY TO CONCEPTUALLY DEFINE THE DIGITAL AVIONICS INFORMATION SYSTEM (DAIS). A PREDESIGN ANALYSIS PROVIDED THE AIR FORCE WITH SUFFICIENT INFORMATION TO DEFINE THE BEST DESIGN APPROACH FOR THE DEVELOPMENT OF THE FOUR DAIS CORE ELEMENTS. CORE ELEMENTS ARE IDENTIFIED AS (1) A MICROPROGRAMMABLE PROCESSOR SYSTEM, (2) A MULTIPLEX/INTERFACE SYSTEM, (3) A MODULAR SOFTWARE SYSTEM, AND (4) AN INTEGRATED CONTROL AND DISPLAY SYSTEM. IN ADDITION, THE REQUIREMENTS FOR A DIGITAL FLIGHT CONTROL SYSTEM WERE IDENTIFIED; AND ASSOCIATED DAIS PROCESSING, CONTROL AND DISPLAY, AND DISTRIBUTION REQUIREMENTS NECESSARY FOR FUNCTION IMPLEMENTATION WERE DETERMINED. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 773 775 17/2
OHIO STATE UNIV COLUMBUS DEPT OF ELECTRICAL ENGINEERING

A DIGITAL TECHNIQUE FOR AUTOMATIC CORRECTION OF TELEVISION IMAGE DISTORTION. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
JUN 73 122P HAEFFNER,ROBERT ALLAN ;
CONTRACT: AF-AFOSR-2048-71
PROJ: AF-9769
TASK: 976902
MONITOR: AFOSR TR-74-0115

UNCLASSIFIED REPORT

DESCRIPTORS: •TELEVISION SYSTEMS, •IMAGES, COMPUTER PROGRAMMING, DISTORTION, DATA PROCESSING, DIGITAL SYSTEMS, AUTOMATIC, CORRECTIONS, THESES, PATTERN RECOGNITION (U)

A TECHNIQUE IS INVESTIGATED FOR THE AUTOMATIC CORRECTION OF SPACIAL DISTORTIONS IN DIGITIZED TELEVISION IMAGES. THIS IS ACCOMPLISHED BY DIGITIZING IMAGES OF A HORIZONTAL AND A VERTAL STRIPED PATTERN. CORRECTION FACTORS MAY THEN BE COMPUTER SO THAT THESE KNOWN PATTERNS ARE MAPPED WITHOUT DISTORTION ONTO THE IMAGE PLANE. BY APPLICATION OF THE SAME FACTORS TO ARBITRARY IMAGES, SPACIAL DISTORTION MAY BE CORRECTED. A NUMBER OF EXPERIMENTS ARE DESCRIBED IN WHICH IT IS SHOWN THAT POSTIONAL ERRORS OF AS SMALL AS 1% OF EITHER THE HORIZONTAL OR VERTICAL DISTANCE MAY BE CORRECTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 774 039 6/2
TEXAS UNIV AUSTIN CENTER FOR CYBERNETIC STUDIES

DIGITAL SPECTRUM ANALYSIS OF THE FIRST AND SECOND HEART SOUNDS. (U)

DESCRIPTIVE NOTE: RESEARCH REPT.,
DEC 73 24P FROME,EDWARD L. ;
FREDERICKSON,EVAN L. ;
REPT. NO. CS-163
CONTRACT: N00014-67-A-0126-0008, N00014-67-A-0126-0009

UNCLASSIFIED REPORT

DESCRIPTORS: *PHONOCARDIOGRAPHY, *SPECTRUM ANALYSIS, DATA PROCESSING, DIGITAL SYSTEMS, FORTRAN, FOURIER TRANSFORMATION, CARDIOVASCULAR DISEASES, DIAGNOSIS(MEDICINE) (U)
IDENTIFIERS: MEDICAL COMPUTER APPLICATIONS (U)

AN APPLICATION OF SPECTRUM ANALYSIS IN PHONOCARDIOGRAPHY IS DESCRIBED. THE AUTHORS PROPOSE THAT SEPARATE SPECTRA BE COMPUTED FOR THE FIRST AND SECOND HEART SOUNDS, AND SUGGEST HOW THE SPECTRA CAN BE USED IN BOTH EXPERIMENTAL AND CLINICAL INVESTIGATIONS. THE COMPUTATIONAL PROCEDURE IS DESCRIBED, AN EXAMPLE IS PRESENTED, AND A FORTRAN SUBROUTINE IS PROVIDED THAT CAN BE USED TO COMPUTE THE SPECTRUM ESTIMATES. THE RESULTS PRESENTED REPRESENT A FIRST STEP IN THE DATA ANALYTIC PROCESS, AND PROVIDE A METHOD OF EXPOSING AND SUMMARIZING THE 'INFORMATION' IN THE DATA. THE METHOD HAS POTENTIAL APPLICATION IN BOTH THE DIAGNOSIS OF CARDIOVASCULAR DISEASE AND THE MONITORING OF CRITICALLY ILL PATIENTS. TO ILLUSTRATE THE LATTER POINT IT IS PROPOSED THAT THE HEART SOUND SPECTRA COULD BE USED TO CONSTRUCT AN INDEX OF RELATIVE HEART SOUND INTENSITY THAT HAS POTENTIAL APPLICATION IN MONITORING THE DEPTH OF ANESTHESIA DURING SURGERY. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 774 082 9/2 17/2
NAVAL ELECTRONICS LAB CENTER SAN DIEGO CALIF

3-TO-1 DATA COMPRESSION VIA WALSH TRANSFORM. (U)

DESCRIPTIVE NOTE: RESEARCH AND DEVELOPMENT REPT. FY 73 AND FY 74,
DEC 73 35P MCCALL,D. C. ;
REPT. NO. NELC-TR-1903
PROJ: NELC-Z257, NELC-Z268

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA COMPRESSION, *WALSH FUNCTIONS, *CODING, DATA PROCESSING, IMAGES, PATTERN RECOGNITION, COMPUTER PROGRAMS, DIGITAL SYSTEMS (U)
IDENTIFIERS: *WALSH TRANSFORMATION, IMAGE PROCESSING (U)

NAVAL ELECTRONICS LABORATORY CENTER (NELC) HAS EMULATED A WALSH TRANSFORM SOURCE ENCODER. THIS DATA COMPRESSION TECHNIQUE HAS GIVEN THREE-TO-ONE COMPRESSION WHILE MAINTAINING GOOD IMAGE FIDELITY. A DIGITAL FRAME CAPTURE UNIT (DFCU) IS USED TO DIGITIZE IMAGES INTO A FORMAT SUITABLE FOR PROCESSING ON A DIGITAL COMPUTER. THE ENCODER IS EMULATED WITH A DIGITAL COMPUTER PROGRAM THAT PROCESSES THE DIGITIZED IMAGES. THESE PROCESSED IMAGES CAN THEN BE DISPLAYED ON THE TV MONITOR OF THE DFCU FOR EVALUATION. GREATER COMPRESSION IS FEASIBLE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 776 987 17/2 9/4
GENERAL ATRONICS CORP PHILADELPHIA PA

CODEM I DATA TRANSMISSION SYSTEM. VOLUME I. THEORY. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUL 72 111P CHASE,D. ;HARPER,R. C. ;
JOFFE,A. M. ;SPENCER,R. W. ;ZABOROWSKI,J. S. , JR;
REPT. NO. GAC-2125-2211-28-VOL-1
CONTRACT: N62269-70-C-0061

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-776 988.

DESCRIPTORS: *DATA TRANSMISSION SYSTEMS, *INFORMATION THEORY, CODING, DECODING, MULTIPATH TRANSMISSION, HIGH FREQUENCY, ERROR CORRECTION CODES, WAVEFORMS, FADING(ELECTROMAGNETIC WAVES), PROBABILITY, STATISTICAL ANALYSIS, ALGORITHMS, DIGITAL SYSTEMS, PULSE COMMUNICATIONS (U)
IDENTIFIERS: CODEM I SYSTEM (U)

CODEM I IS A DATA TERMINAL SET WHICH OFFERS THE CAPABILITY OF OBTAINING EXTREMELY RELIABLE (ERROR RATES BELOW 0.00001) DIGITAL DATA TRANSMISSION OVER AN HF RADIO CHANNEL AT A DATA RATE EQUAL TO OR GREATER THAN PREVIOUS SYSTEMS. THE BASIC CONCEPT OF THE CODEM IS THE INTEGRATION OF ERROR CORRECTING CODING AND THE MODEM DESIGN IN SUCH A MANNER THAT CHANNEL MEASUREMENT INFORMATION CAN BE USED TO ENHANCE THE DATA RELIABILITY. CODEM I IS CAPABLE OF OPERATION AT 4800 BPS USING TWO INDEPENDENT SIDEBANDS AND 2400 BPS IN EITHER A DUAL FREQUENCY DIVERSITY MODE OR WITHIN A SINGLE VOICE BANDWIDTH CHANNEL. IN VOLUME I THE CODEM CONCEPT IS EXPLAINED, THEORETICAL RESULTS ARE OBTAINED, AND SOME COMPUTER AND FIELD RESULTS ARE PRESENTED.
(MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 776 988 17/2 9/2
GENERAL ATRONICS CORP PHILADELPHIA PA

CODEM I DATA TRANSMISSION SYSTEM. VOLUME II. TEST RESULTS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUL 72 126P CHASE,D. ;HARPER,R. C. ;
JOFFE,A. M. ;SPENCER,R. W. ;ZABOROWSKI,J. S. , JR;
REPT. NO. GAC-2125-2211-28-VOL-2
CONTRACT: N62269-70-C-0061

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-776 987.

DESCRIPTORS: •DATA TRANSMISSION SYSTEMS, •INFORMATION THEORY, COMMUNICATION EQUIPMENT, TEST METHODS, MODEMS, COMPUTERIZED SIMULATION, HIGH FREQUENCY, DIGITAL SYSTEMS, PULSE COMMUNICATIONS (U)
IDENTIFIERS: CODEM I SYSTEM (U)

CODEM I IS A DATA TERMINAL SET WHICH OFFERS THE CAPABILITY OF OBTAINING EXTREMELY RELIABLE (ERROR RATES BELOW 0.00001) DIGITAL DATA TRANSMISSION OVER AN HF RADIO CHANNEL AT A DATA RATE EQUAL TO OR GREATER THAN PREVIOUS SYSTEMS. THE BASIC CONCEPT OF THE CODEM IS THE INTEGRATION OF ERROR CORRECTING CODING AND THE MODEM DESIGN IN SUCH A MANNER THAT CHANNEL MEASUREMENT INFORMATION CAN BE USED TO ENHANCE THE DATA RELIABILITY. CODEM I IS CAPABLE OF OPERATION AT 4800 BPS USING TWO INDEPENDENT SIDEBANDS AND 2400 BPS IN EITHER A DUAL FREQUENCY DIVERSITY MODE OR WITHIN A SINGLE VOICE BANDWIDTH CHANNEL. VOLUME 2 COVERS THE COMPLETE TEST PROGRAM CARRIED OUT TO DETERMINE THE PERFORMANCE OF THE CODEM I EQUIPMENT. THIS REPORT INCLUDES THE RESULTS OF THE FIELD TEST CONDUCTED BY THE NAVAL AIR DEVELOPMENT CENTER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 780 583 1/3 9/2
TEXAS INSTRUMENTS INC DALLAS EQUIPMENT GROUP

A CONCEPTUAL DEFINITION STUDY FOR A DIGITAL AVIONICS INFORMATION SYSTEM (APPROACH II). VOLUME III. APPENDIXES E AND F. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 FEB-30 JUN 73, MAR 74 470P BRODNAX,C. T. ;
CONTRACT: F33615-73-C-1156
PROJ: AF-6091
MONITOR: AFAL TR-73-427-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-780 582.

DESCRIPTORS: *AVIONICS, *INFORMATION SYSTEMS, DIGITAL SYSTEMS, DATA PROCESSING EQUIPMENT, DISPLAY SYSTEMS, CONTROL, DATA PROCESSING, TRANSFER, COMPUTER PROGRAMMING (U)
IDENTIFIERS: DAIS(DIGITAL AVIONICS INFORMATION SYSTEMS), DIGITAL AVIONICS INFORMATION SYSTEMS (U)

;CONTENTS: DATA TRANSFER AND INTERFACE REQUIREMENTS; SIGNAL SUMMARY LISTING. THIS DOCUMENT IS NOT FULLY LEGIBLE. WHEN STOCK IS EXHAUSTED, MICROFICHE ONLY WILL BE MADE AVAILABLE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 781 112 9/2
DRAPER (CHARLES STARK) LAB INC CAMBRIDGE MASS

INTELLIGENCE GRAPHICS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
MAR 74 83P WOLFE,PETER D. ;SMITH,
NATHAN E. ;VELLA,JOHN E. ;
REPT. NO. R-780
CONTRACT: F30602-72-C-0208
MONITOR: RADC TR-74-52

UNCLASSIFIED REPORT

DESCRIPTORS: *INTERACTIVE GRAPHICS, INFORMATION PROCESSING, COMPUTER PROGRAMMING, DATA PROCESSING TERMINALS, GRAPHICS, COMPUTERS, DATA BASES, DIGITAL SYSTEMS, DISPLAY SYSTEMS, TELEVISION DISPLAY SYSTEMS, INTERACTIONS, MAN MACHINE SYSTEMS, EDITING, COMPUTER APPLICATIONS, DATA MANAGEMENT, COLOR TELEVISION (U)

APPLICATION-ORIENTED SOFTWARE WAS DEVELOPED FOR A PROGRAMMABLE DIGITAL TELEVISION DISPLAY SYSTEM, KNOWN AS THE ANAGRAPH SYSTEM. THE ANAGRAPH SYSTEM IS A STANDARD, OFF-THE-SHELF PRODUCT AND INCLUDES A MULTI-TERMINAL DIGITAL TELEVISION DISPLAY GENERATOR, A PROGRAMMABLE DISPLAY CONTROLLER, AND A FIXED-HEAD DISC FOR LOCAL DATA BASE STORAGE. AN IBM-COMPATIBLE MAGNETIC TAPE DRIVE IS ALSO INCLUDED IN THE SYSTEM FOR WHICH THIS SOFTWARE WAS DEVELOPED. SOFTWARE DEVELOPED INCLUDES A TEXT EDITOR AND A GRAPHIC EDITOR. BOTH PROGRAMS OPERATE STAND-ALONE ON THE PROGRAMMABLE DISPLAY CONTROLLER. DATA IS TRANSFERRED TO AND FROM THE LOCAL DATA BASE BY MEANS OF IBM STANDARD-LABELLED MAGNETIC TAPES. THE SYSTEM, WHICH IS CURRENTLY IN OPERATION AT RADC, DEMONSTRATES THE EFFECTIVENESS OF LOW-COST DIGITAL TELEVISION TECHNIQUES IN SUPPORT OF INTELLIGENCE DATA HANDLING APPLICATIONS INVOLVING INTERACTIVE TEXT AND GRAPHIC EDITING, LOCAL DATA-BASE ACCESS, AND SUPERPOSITION OF STANDARD TELEVEISION DATA WITH COMPUTER-GENERATED VIDEO. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 781 648 9/2
NAVAL RESEARCH LAB WASHINGTON D C

AN/UYK-17(XB-1)(V) SIGNAL PROCESSING ELEMENT ARCHITECURE. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,
JUN 74 10RP SMITH,W. R. ;IHNAT,J. P.
;SMITH,H. H. ;HEAD,N. M. , JR.;FREEMAN,E.
;
REPT. NO. NRL-7704
PROJ: NRL-480206, NRL-480210

UNCLASSIFIED REPORT

DESCRIPTORS: *SIGNAL PROCESSING, DIGITAL SYSTEMS, ARITHMETIC UNITS, CONTROL, COMPUTER PROGRAMMING, MICROPROGRAMMING, DIGITAL COMPUTERS, CHANNEL SELECTORS (U)
IDENTIFIERS: AN/UYK-17, AN/UYK-17(XB-1)(V), MOST PROJECT-3 (U)

THE AN/UYK-17(XB-1)(V) SIGNAL PROCESSING ELEMENT (SPE) WAS DEVELOPED AT THE NAVAL RESEARCH LABORATORY TO PROVIDE A HIGH PERFORMANCE PROCESSING FACILITY FOR RADAR, SONAR, AND COMMUNICATIONS SYSTEMS. THE DESIGN OF THE MICROPROGRAMMABLE SPE ENABLES REALIZATION OF EFFICIENT, FLEXIBLE SOLUTIONS TO PROBLEMS WHICH ARISE IN DIGITAL SIGNAL PROCESSING TASKS. THE SPE IS INTENDED TO BE COMPATIBLE WITH THE NAVY ALL APPLICATIONS DIGITAL COMPUTER (AADC) NOW UNDER DEVELOPMENT, AND WILL BE IMPLEMENTED AS PART OF THE AADC SYSTEM. THE SPE CAN ALSO BE USED AS A STAND-ALONE PROCESSOR. THE SPE IS A COLLECTION OF SEVERAL INTERCONNECTED COMPONENTS. THIS REPORT DESCRIBES THE ORGANIZATION OF THE SPE, EXPLAINING HOW SPE COMPONENTS ARE INTERCONNECTED AND HOW THEY INTERACT IN ORDER TO ACCOMPLISH A SIGNAL PROCESSING TASK. FURTHERMORE, DETAILED REGISTER-LEVEL DESCRIPTIONS OF THE PROGRAMMABLE SPE COMPONENTS -- THE MICROPROGRAMMED CONTROL UNIT (MCU) AND THE SIGNAL PROCESSING ARITHMETIC UNIT (SPAU) -- ARE PRESENTED. THE OPERATION OF THE SELECTOR CHANNEL CONTROLLER (SCC), WHICH IS THE SPE INPUT/OUTPUT CONTROLLER, IS ALSO DESCRIBED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 782 230 8/2 9/2
KEUFFEL AND ESSER CO MORRISTOWN N J

DIGITAL MAPPING SYSTEM: MATHEMATICAL PROCESSING. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 7 APR 72-31 MAY 74,
MAY 74 138P ROSENBERG,PAUL ;ERICKSON, KENT F. ;ROWE,GERHARDT C. ;
CONTRACT: DAAK02-72-C-0288
PROJ: K/E-5098
MONITOR: ETL CR-74-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH PAUL ROSENBERG ASSOCIATES, PELHAM, N.Y. REPT. NO. PRA-728R.

DESCRIPTORS: *MAPPING, DIGITAL SYSTEMS, TOPOGRAPHIC MAPS, AERIAL PHOTOGRAPHY, PHOTOGRAMMETRY, CORRELATION TECHNIQUES, COMPUTER PROGRAMMING (U)

PRINCIPAL AND CRITICAL PARTS OF THE MATHEMATICAL PROCESSING IN THE DIGITAL MAPPING SYSTEM (DMS) HAVE BEEN FORMULATED, DEVELOPED, TESTED AND EVALUATED, USING ACTUAL DIGITIZED DENSITY DATA FROM AERIAL PHOTOGRAPHS. THE RESULTS INDICATE THAT THE DMS, INCLUDING THE INFILTRATION PROCEDURE AND MIXED COORDINATES, IS FEASIBLE. AUTOMATIC MATCHING AND INFILTRATION HAVE BEEN DEMONSTRATED SUCCESSFULLY IN A VARIETY OF SCENES. RECOMMENDATIONS ARE MADE FOR FURTHER DEVELOPMENT OF THE DMS. THE DMS IS AN AUTOMATIC SYSTEM FOR PRODUCING CONTOURED TOPOGRAPHIC MAPS, PROFILES, AND ORTHOPHOTOGRAPHS ACCURATELY FROM AERIAL PHOTOGRAPHS, BY DIGITAL METHODS ONLY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 783 063 9/2 1/3
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA

STANDARDIZATION OF AVIONICS INFORMATION SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
AUG 74 402P BEUM,CORLIN O. , JR.;
LEVIN,E. ;
CONTRACT: DAHC15-73-C-0200

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH SYSTEM DEVELOPMENT CORP., SANTA MONICA, CALIF., REPT. NO. SDC-TM-5159/000/00A.

DESCRIPTORS: *INFORMATION PROCESSING, *AVIONICS, STANDARDIZATION, INTEGRATED CIRCUITS, MULTIPLEXING, RELIABILITY(ELECTRONICS), DIGITAL SYSTEMS, ELECTRONIC EQUIPMENT, COMPUTERS, ECONOMICS, FORECASTING (U)
IDENTIFIERS: LARGE SCALE INTEGRATED CIRCUITS (U)

THE REPORT PRESENTS THE RESULTS OF A STUDY TO SELECT AND RECOMMEND STANDARDIZATION CONCEPTS FOR AVIONICS INFORMATION PROCESSING SYSTEMS FOR THE 1980-1990 TIME PERIODS. THE RESULTS INDICATE THAT TECHNOLOGY ADVANCES IN THE AREAS OF DIGITAL ELECTRONICS, LARGE SCALE INTEGRATED CIRCUITS (LSI), AND MULTIPLEXING SUPPORT THE THESIS THAT AVIONIC INFORMATION PROCESSING HARDWARE WILL BECOME BOTH HIGHLY RELIABLE AND VERY LOW IN COST IN THE TIME PERIODS BEING CONSIDERED. THIS PERMITS THE AVIONIC SYSTEM DESIGNER TO CONSIDER A HIGHLY DISTRIBUTED, DEDICATED DIGITAL SYSTEM ARCHITECTURE WHICH INVOLVES INEFFICIENT USE OF CPU TIME, MEMORY, I/O BUFFERS AND REDUNDANCY TO ALLEVIATE THE GROWING COST, SCHEDULE AND RELIABILITY PROBLEMS IN AVIONIC SYSTEMS SOFTWARE. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 786 424 17/2 9/2
DRAPER (CHARLES STARK) LAB INC CAMBRIDGE MASS

INTELLIGENCE TEXT EDITING. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
SEP 74 52P WOLFE,PETER D. ;
REPT. NO. R-824
CONTRACT: F30602-74-C-0020
MONITOR: RADC TR-74-219

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *TELEVISION DISPLAY SYSTEMS, *DIGITAL SYSTEMS, *COMPUTER GRAPHICS, INTERFACES (U)
IDENTIFIERS: TEXT EDITING SYSTEMS, ANAGRAPH SYSTEM (U)

APPLICATION-ORIENTED SOFTWARE HAS BEEN DEVELOPED FOR A PROGRAMMABLE DIGITAL TELEVISION DISPLAY SYSTEM, KNOWN AS THE ANAGRAPH SYSTEM. THE ANAGRAPH SYSTEM IS A STANDARD, OFF-THE-SHELF PRODUCT OF DATA DISC, INC. OF SUNNYVALE, CALIFORNIA, AND INCLUDES A MULTI-TERMINAL DIGITAL TELEVISION DISPLAY GENERATOR, A PROGRAMMABLE DISPLAY CONTROLLER, AND A FIXED-HEAD DISC FOR LOCAL DATA BASE STORAGE. AN IBM-COMPATIBLE MAGNETIC TAPE DRIVE IS ALSO INCLUDED IN THE SYSTEM FOR WHICH THIS SOFTWARE WAS DEVELOPED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- B36 841 4/2 14/2
NAVAL WEAPONS CENTER CHINA LAKE CALIF

ROCKET OZONESONDE (ROCOZ)-DESIGN AND DEVELOPMENT. (U)

DESCRIPTIVE NOTE: RESEARCH REPT.,
JUL 68 45P KRUEGER,A. J. ;MCBRIDE, W. R. ;
REPT. NO. NWC-TP-4512
PROJ: NR-082-183

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOUNDING ROCKETS, *RADIOSONDES), OZONE, DETECTION, MANUFACTURING, DESIGN, STRATOSPHERE, THEORY, PAYLOAD, ULTRAVIOLET SPECTROSCOPY, DIGITAL SYSTEMS, FLIGHT TESTING, DATA PROCESSING, DISTRIBUTION (U)
IDENTIFIERS: ARCAS, *OZONESONDES (U)

THE REPORT DESCRIBES THE THEORY AND DESIGN OF AN OPTICAL OZONESONDE SYSTEM DEVELOPED FOR USE ON ARCAS ROCKETS. THE PAYLOAD IS AN ULTRAVIOLET FILTER PHOTOMETER USEFUL IN THE ALTITUDE RANGE 20 TO 60 KM. A REAL-TIME DIGITAL DATA LOGGING SYSTEM HAS BEEN CONSTRUCTED FOR RECORDING THE DATA THAT ARE TELEMETERED ON THE 1680 MHZ METEOROLOGICAL FREQUENCY. DATA-PROCESSING PROCEDURES ARE DESCRIBED AND RESULTS OF A TEST FLIGHT ARE PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 837 282 4/2 17/9
MASSACHUSETTS INST OF TECH CAMBRIDGE

APPLICATION OF RADAR TO MEASUREMENT OF SURFACE PRECIPITATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 SEP 65-31 AUG 67,
MAR 68 23P AUSTIN,PAULINE M. ;
CONTRACT: DA-28-043-AMC-01472(E)
PROJ: DA-IVD-14501B53A
TASK: IVD-14501B53A-07
MONITOR: ECOM 01472-F

UNCLASSIFIED REPORT

DESCRIPTORS: (*ATMOSPHERIC PRECIPITATION, *METEOROLOGICAL RADAR), AIR MASS ANALYSIS, HYGROMETERS, STORMS, CONVECTION(ATMOSPHERIC), RADAR EQUIPMENT, DIGITAL SYSTEMS, MAPPING, SNOW, CYCLONES, INSTRUMENTATION, DISTRIBUTION, PREDICTIONS, DATA PROCESSING, PARABOLIC ANTENNAS, MATHEMATICAL MODELS, PARTICLE SIZE, RAINDROPS (U)
IDENTIFIERS: SUMMER (U)

WORK IN INSTRUMENTATION WAS PRIMARILY CONCERNED WITH INSTALLATION OF NEW RADARS AND AUXILIARY EQUIPMENT. THE 10-CM WR-66 RADAR HAS AN 18-FT PARABOLIC DISH WHICH PROVIDES HIGH RESOLUTION AND SENSITIVITY. THE SIGNAL IS AVERAGED BY A DIGITAL SWEEP INTEGRATOR, RANGE-NORMALIZED, AND QUANTIZED INTO INTENSITY LEVELS WHICH CAN BE DISPLAYED ON THE SCOPE IN THREE SHADES OF GRAY. A DATA PROCESSOR FOR DIGITAL MAPPING IN CARTESIAN COORDINATES HAS BEEN DESIGNED. THE INSTRUMENTS AND TECHNIQUES WHICH HAVE BEEN DEVELOPED AND ARE NOW IN OPERATION HAVE OVERCOME MANY OF THE LIMITATIONS IN THE EARLIER MODELS. A COMPREHENSIVE STUDY OF MESOSCALE PRECIPITATION PATTERNS AND THEIR RELATION TO MACROSCALE PARAMETERS, BASED ON ALL THE STORMS WHICH OCCURRED DURING 1962-1963, IS IN PROGRESS. THESE STORMS HAVE BEEN GROUPED ACCORDING TO SYNOPTIC TYPE, AND ANALYSIS OF AIR MASS STORMS AND COASTAL CYCLONES HAS BEEN COMPLETED. SOME PRELIMINARY COMPUTATIONS HAVE BEEN MADE ON A NUMERICAL MODEL FOR AGGREGATION OF SNOWFLAKES, A PROCESS OF IMPORTANCE IN THE DEVELOPMENT OF RAINDROP SIZE DISTRIBUTIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 841 083 17/2.1
PHILCO-FORD CORP BLUE BELL PA COMMUNICATIONS AND ELECTRONICS DIV

ADVANCED DIGITAL RECEIVER TECHNIQUES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 6 FEB 67-5 MAR 68, SEP 68 172P ABEND,KENNETH ;JURENKO, DONALD J. ;KANAL,LAVEEN N. ;HARLEY,THOMAS J. , JR.;CHANDRASEKARAN,BALAKRISHNAN ;
REPT. NO. 2751
CONTRACT: F30602-67-C-0178
PROJ: AF-4519
TASK: 451902
MONITOR: RADC TR-68-169

UNCLASSIFIED REPORT

DESCRIPTORS: (*RADIO RECEIVERS, DIGITAL SYSTEMS), (*COMMUNICATION AND RADIO SYSTEMS, RADIO RECEIVERS), DEMODULATORS, STATISTICAL ANALYSIS, FREQUENCY MODULATION, AMPLITUDE MODULATION, ADAPTIVE SYSTEMS, DIGITAL TO ANALOG CONVERTERS, SHIFT REGISTERS, INTEGRATED CIRCUITS (U)
IDENTIFIERS: BAYESIAN ANALYSIS, *DIGITAL RECEIVERS, ZERO CROSSING DETECTORS (U)

THIS REPORT IS DEVOTED TO THE INVESTIGATION OF ROBUST AND ADAPTIVE TECHNIQUES FOR THE DIGITAL RECEPTION OF ANALOGUE MODULATED SIGNALS. THE ADVANTAGE OF STATIONARY-POINT SAMPLING OVER RANDOM SAMPLING IS DEMONSTRATED FOR AMPLITUDE DEMODULATION AND FOR FREQUENCY DEMODULATION BY DERIVATIVE MEASUREMENT. TOPICS INVESTIGATED INCLUDE VARIOUS FREQUENCY MEASUREMENT TECHNIQUES, NONPARAMETRIC STATISTICS AND ROBUST ESTIMATION, AND ADAPTIVE BAYESIAN ESTIMATION. A DIGITAL FM RECEIVER, BASED ON MEASURING THE TIME BETWEEN ZERO CROSSINGS, WAS BUILT AND TESTED USING ROBUST ESTIMATION TECHNIQUES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 843 915 21/5 14/2
HAMILTON STANDARD WINDSOR LOCKS CONN

DYNAMIC ANALYSIS TECHNIQUES FOR TURBINE ENGINE CONTROLS. (U)

DESCRIPTIVE NOTE: SUMMARY REPT., 1 SEP 67-1 SEP 68, NOV 68 192P BATES,ARTHUR L. ;
REPT. NO. HSER-5168
CONTRACT: F33615-67-C-1013
PROJ: AF-3066
TASK: 306603
MONITOR: AFAPL TR-68-122

UNCLASSIFIED REPORT

DESCRIPTORS: (*TEST FACILITIES, DIGITAL SYSTEMS), (*TURBOJET ENGINES, CONTROL SYSTEMS), SERVOMECHANISMS, TURBOJET EXHAUST NOZZLES, SIMULATION, DIGITAL COMPUTERS, FEASIBILITY STUDIES, OPTIMIZATION, TURBOFAN ENGINES, SPEED REGULATORS (U)
IDENTIFIERS: COMPUTERIZED SIMULATION (U)

THE PRIMARY OBJECTIVE OF THIS STUDY CONTRACT IS TO DEVELOP PRACTICAL TECHNIQUES FOR THE DIGITAL SIMULATION OF TURBINE ENGINES AND THE ASSOCIATED CONTROLS. DETAILED SIMULATIONS OF TYPICAL CONTROL COMPONENTS WERE DEVELOPED AND VERIFIED BY COMPARISON WITH ACTUAL TEST DATA. THE GENERAL DEVELOPMENT OF SEVERAL POTENTIAL ENGINE CONTROLS IS THEN PRESENTED AND CRITICAL AREAS OF CONCERN ARE DISCUSSED. THESE CONTROLS WERE SIMULATED FOR TWO COMPLEX ENGINE SIMULATIONS TO DOCUMENT THESE AREAS OF CONCERN AND TO DEMONSTRATE THE FEASIBILITY OF THE DIGITAL SIMULATION TECHNIQUES. A COMPARISON OF SEVERAL MODES OF CONTROL OR CONTROL IMPLEMENTATIONS IS PRESENTED FOR EACH ENGINE. STUDIES WERE COMPLETED IN THE AREAS OF AUTOMATIC ASSESSMENT BY UTILIZATION OF THE DIGITAL COMPUTER AND MANIPULATION OF CONTROL VARIABLES TO OPTIMIZE THE PERFORMANCE OF A SPECIFIC SYSTEM. SUCH AS ASSESSMENT AND OPTIMIZATION WOULD BE USEFUL IN COMPARING SEVERAL SYSTEMS. FINALLY, A SUMMARY OF THE ENGINE CHARACTERISTICS IS INCLUDED IN ADDITION TO THE PROGRAM ORGANIZATION AND SIMULATION CONCEPTS WHICH HAVE BEEN DERIVED. THIS STUDY DEMONSTRATED THAT PRACTICAL DIGITAL SIMULATION TECHNIQUES CAN BE DEVELOPED AND APPLIED TO COMPLEX TURBINE ENGINES AND CONTROLS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 854 628 8/10 9/2
NAVAL OCEANOGRAPHIC OFFICE WASHINGTON D C

FITTING A SET OF STRAIGHT LINES TO A DIGITAL BT PROFILE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 69 38P YERGEN,WALTER E. ;
REPT. NO. NOO-TR-214
PROJ: MF-05-243-301

UNCLASSIFIED REPORT

DESCRIPTORS: (*BATHYTHERMOGRAPH DATA, DATA PROCESSING), ALGORITHMS, REGRESSION ANALYSIS, SALINITY, DATA STORAGE SYSTEMS, TEMPERATURE, DEPTH FINDING, EFFECTIVENESS, SUBROUTINES, COMPUTER PROGRAMMING, DIGITAL SYSTEMS (U)
IDENTIFIERS: DATA SMOOTHING, DATA REDUCTION, GRADIENTS, TEMPERATURE (U)

A 'THREE LEVEL TOLERANCE ALGORITHM' FOR FITTING SETS OF STRAIGHT LINES TO POINTS DIGITIZED AT REGULAR DEPTH INTERVALS FROM A BT PROFILE IS DISCUSSED. THE APPLICATION OF THIS ALGORITHM TO THE REDUCTION OF OTHER PROFILE DATA SIMILARLY DIGITIZED IS DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- A55 597 17/2
CONTROL DATA CORP MINNEAPOLIS MINN COMMUNICATIONS SYSTEMS DIV

FULLY AUTOMATED HIGH SPEED MESSAGE ENTRY EQUIPMENT (AN/FST-6 (XE-2)). (U)

DESCRIPTIVE NOTE: SEMI-ANNUAL REPT. 15 MAR 68-7 FEB 69.
FEB 69 30P PETRY,LLOYD A. ;
CONTRACT: DAAB07-68-C-0256
MONITOR: ECOM 0256-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*ARMY OPERATIONS, COMMUNICATION SYSTEMS), (*DATA TRANSMISSION SYSTEMS, DIGITAL SYSTEMS), (*COMMUNICATION EQUIPMENT, *INPUT OUTPUT DEVICES), OPTICAL SCANNING, READING MACHINES, CHARACTER RECOGNITION, PUNCHED TAPE, COMPUTERS, AUTOMATION, PROCESSING (U)
IDENTIFIERS: AUTODIN(AUTOMATIC DIGITAL NETWORKS), DIGITAL COMMUNICATION SYSTEMS, TELECOMMUNICATION (U)

THE DEVELOPMENT MODEL WILL CONSIST OF A CONTROL DATA 1700 COMPUTER SYSTEM WITH ADDED COMMUNICATIONS LINKS. IT WILL PROVIDE OPTICAL CHARACTER RECOGNITION MESSAGE ENTRY (BOTH LOCAL AND REMOTE), MESSAGE CONTENT VALIDATION, ADDRESSEE ROUTING, MESSAGE FORMATTING, AND MESSAGE OUTPUT. OUTPUT WILL BE TO THE AUTODIN NETWORK, TO A LOCAL MESSAGE SWITCH, OR TO PUNCHED PAPER TAPE. REMOTE TERMINAL OPERATION WILL BE SIMULATED WITH EQUIPMENT INSTALLED AT THE CENTRAL SITE. THIS WILL MAKE POSSIBLE FUTURE EXPANSION OF THE SYSTEM BY THE EXPEDIENT OF ADDED REMOTE SITE EQUIPMENT AND A MINIMAL ADDITIONAL PROGRAMMING PACKAGE. THE SOFTWARE BEING DEVELOPED FOR THE AN/FST-6(XE-2) SYSTEM WILL BE MODULAR AND WILL OPERATE IN A REAL-TIME ENVIRONMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 859 090 9/2 17/2
MICHIGAN UNIV ANN ARBOR SYSTEMS ENGINEERING LAB

A STUDY OF INFORMATION FLOW IN MULTIPLE-COMPUTER AND MULTIPLE-CONSOLE DATA PROCESSING SYSTEMS. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 3 (FINAL), JAN 68-MAR 69,
AUG 69 197P IRANI,K. B. ;NAYLOR,A. W. ;FOLEY,J. D. ;BOYSE,J. W. ;COLEMAN,D. M. ;
CONTRACT: AF 30(602)-3953
PROJ: AF-5581
TASK: 558102
MONITOR: RADC TR-69-189

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING, *DIGITAL SYSTEMS), COMPUTERS, MATHEMATICAL MODELS, QUEUEING THEORY, DECISION THEORY, MULTIPLE OPERATION, OPTIMIZATION, DESIGN, MEMORY DEVICES, DISPLAY SYSTEMS, DATA TRANSMISSION SYSTEMS, COMPUTER PROGRAMMING (U)

THE REPORT DOCUMENTS CONTINUING RESEARCH INTO THE APPLICATION OF QUEUEING THEORY AND MARKOV DECISION PROCESSES TO THE DESIGN AND INVESTIGATION OF MULTIPLE-USER SYSTEMS. A SUMMARY OF THE THEORETICAL INVESTIGATION CONDUCTED, THE MAJOR CONCLUSIONS REACHED, AND SOME TYPICAL APPLICATIONS ARE INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 861 558 17/9 1/3
CONDUCTRON CORP ANN ARBOR MICH ANN ARBOR DIV

SYNTHETIC APERTURE HELICOPTER RADAR
EXPERIMENTAL EVALUATION PROGRAM. (U)

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. NO. 2, 1 MAY-31 JUL 69,
NOV 69 24P POWELL,NORMAN F. ;
CONTRACT: DAAB07-69-C-0223
PROJ: DA-1-Z-662703-A-175
TASK: 1-Z-662703-A-17501
MONITOR: ECOM 0223-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO QUARTERLY REPORT NO. 1, AD-856 480.

DESCRIPTORS: (*SYNTHETIC APERTURE RADAR, HELICOPTERS), MOVING TARGET INDICATORS, DATA PROCESSING, DIGITAL SYSTEMS, AIRCRAFT ANTENNAS, RADAR ANTENNAS, L BAND (U)

THE PURPOSE OF THE PROGRAM IS TO DETERMINE THE RESOLUTION AND MTI PERFORMANCE OF A HELICOPTER RADAR CONCEPT EMPLOYING ROTOR TIP MOUNTED ANTENNAS AND REAL-TIME DIGITAL SYNTHETIC APERTURE PROCESSING. THE APPROACH INVOLVES AN EXPERIMENTAL EVALUATION OF THE CONCEPT, VIA A TOWER-MOUNTED ROTATING ANTENNA, TO DEMONSTRATE PERFORMANCE CAPABILITIES AND LIMITATIONS OF THE CONCEPT AS ACHIEVABLE IN THE L-BAND FREQUENCY REGION. THIS ENTAILS: (1) COLLECTING RADAR DATA FROM THE TOWER-MOUNTED ROTATING ANTENNA FOR TARGET AND BACKGROUND CONDITIONS OF INTEREST, (2) RECORDING COLLECTED RADAR DATA ON MAGNETIC TAPE IN A DIGITAL FORMAT, (3) PROCESSING RECORDED DATA THROUGH A GENERAL PURPOSE DIGITAL COMPUTER TO ACHIEVE RESOLUTION IMPROVEMENT AND MTI DISCRIMINATION, AND (4) IMAGING PROCESSED DATA ONTO PHOTOGRAPHIC FILM. THE REPORT DESCRIBES THE RADAR DATA COLLECTION EQUIPMENTS WHICH WERE FABRICATED AND EMPLACED, THE DATA PROCESSING EQUIPMENTS ASSEMBLED, AND THE DATA PROCESSING SOFTWARE PROGRAMS PREPARED FOR USE IN SUBSEQUENT EXPERIMENTATIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 875 439 9/4 9/5 20/1
NAVAL ORDNANCE LAB WHITE OAK MD

ORGANIZATION OF N-BIT DIGITAL TIME COMPRESSORS TO ACHIEVE DIFFERENT TIME COMPRESSION FACTORS AT A FIXED SAMPLING RATE. (U)

JUN 70 30P ZIRBEL,JOHN P. ;
REPT. NO. NOLTR-70-122
PROJ: A05-510/W3A56

UNCLASSIFIED REPORT

DESCRIPTORS: (*INFORMATION THEORY, DIGITAL SYSTEMS), (*ACOUSTIC SIGNALS, SPECTRUM ANALYZERS), (*CORRELATORS, DESIGN), SEMICONDUCTORS, SHIFT REGISTERS, SAMPLING, STATISTICAL FUNCTIONS (U)
IDENTIFIERS: AUTOCORRELATION, BLOCK DIAGRAMS, CLOCK PULSE MODULES, DELTIC CORRELATORS, DIGITAL TIME COMPRESSORS, SPECTRUM ANALYSIS (U)

DIGITAL TIME COMPRESSORS HAVE BEEN USED EXTENSIVELY TO PERMIT SUCH SIGNAL PROCESSING TECHNIQUES AS SPECTRUM ANALYSIS AND AUTOCORRELATION ANALYSIS TO BE PERFORMED IN REAL-TIME WITHOUT USING NUMEROUS PARALLEL PROCESSORS. AN ORGANIZATION OF DATA IN PARALLEL SHIFT REGISTERS IS DESCRIBED ALLOWING N-BIT DIGITAL TIME COMPRESSORS TO PRODUCE DIFFERENT TIME COMPRESSION FACTORS AT A FIXED SAMPLING RATE. THIS TECHNIQUE CAN BE USEFUL IN LOW POWER APPLICATIONS WHERE THE REQUIRED TIME COMPRESSION FACTOR IS LESS THAN THAT NORMALLY ASSOCIATED WITH DELTIC OPERATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 883 359 9/2 9/5 9/3
RCA LABS PRINCETON N J

CHARGE-COUPLED CIRCUITS. (U)

DESCRIPTIVE NOTE: SCIENTIFIC REPT. NO. 2, 1 NOV 69-31 OCT 70,
FEB 71 64P KOSONOCKY,WALTER F. ;
CONTRACT: F19628-69-C-0128
PROJ: AF-4641
TASK: 464104
MONITOR: AFCRL 71-0121

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHIFT REGISTERS, *COUPLING CIRCUITS), (*INTEGRATED CIRCUITS, CARRIERS(SEMICONDUCTORS)), (*THIN FILM STORAGE DEVICES, ANALOG SYSTEMS), (*GATES(CIRCUITS), SEMICONDUCTING FILMS), ELECTRONIC SCANNERS, PHOTODIODES, DELAY LINES, IMAGES, DIGITAL SYSTEMS, PHASE(ELECTRONICS), PULSES, COMPUTER LOGIC, CLOCKS, MEDIUM FREQUENCY, LOGIC CIRCUITS, VIDEO SIGNALS, RESOLUTION, ELECTRIC FIELDS, DIFFUSION, MOBILITY, SILICON COMPOUNDS, SILICON, ALUMINUM, OXIDES, CIRCUIT INTERCONNECTIONS, PERFORMANCE(ENGINEERING) (U)
IDENTIFIERS: *ANALOG SHIFT REGISTERS, CHARGE COUPLED DEVICES, DEPLETION REGION, DYNODES, FLOATING ELECTRODES, METAL OXIDE SEMICONDUCTORS, MOS(METAL OXIDE SEMICONDUCTORS), OPTICAL ARRAYS, *SEMICONDUCTOR MEMORIES, TRANSPARENT ELECTRODES (U)

THIS REPORT DESCRIBES THE OPERATION AND THE APPLICATIONS OF CHARGE-COUPLED SHIFT REGISTERS FOR ANALOG AND DIGITAL SIGNALS. SILICON-GATE CONSTRUCTION IS PROPOSED FOR ACHIEVING HIGH-PERFORMANCE, HIGH-DENSITY STRUCTURES, AND ALSO TWO-PHASE CHARGE-COUPLED DEVICES. THE EFFECT OF THE FRINGING FIELDS EXTERNALLY INDUCED BY THE PHASE-VOLTAGE PULSES IS ANALYZED; ALSO, THE RELATIVE IMPORTANCE OF THE THERMAL DIFFUSION AND THE INTERNALLY INDUCED DRIFT FIELD DUE TO AN UNEVEN CHARGE DISTRIBUTION IS CONSIDERED. SIMPLE SIGNAL-REGENERATION STAGES FOR DIGITAL CHARGE-COUPLED SHIFT REGISTERS ARE DESCRIBED, AND THEIR OPERATION IS DEMONSTRATED BY CHARGE-COUPLED CIRCUITS MADE BY A P-MOS PROCESS. A CHARGE-TRANSFER EFFICIENCY OF ABOUT 99.69 PER ELECTRODE AT A CLOCK FREQUENCY OF 1 MHZ WAS OBTAINED IN THE OPERATION OF 3-PHASE 8-BIT SHIFT REGISTERS MADE BY THE P-MOS PROCESS. THE FEASIBILITY OF SELF-SCANNING CHARGE-COUPLED PHOTO-SENSOR ARRAYS FOR VIDEO SIGNAL IS BRIEFLY DISCUSSED.(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 908 524 9/4 17/2
ELECTRONIC COMMUNICATIONS INC ST PETERSBURG FLA

DIGITAL INTERFACE CODE CONVERTER. (U)

DESCRIPTIVE NOTE: FINAL REPT. 23 JUN 71-23 DEC 72,
JAN 73 50P BETTS,WILLIAM L. ;MOORE,
WILLIAM H. ;STAUDT,FEATHER A. ;
REPT. NO. ECI-1-AER-0035
CONTRACT: DAAB07-71-C-0344
MONITOR: ECOM 0344-F-71

UNCLASSIFIED REPORT

DESCRIPTORS: (*CODING, DIGITAL SYSTEMS), (*DATA TRANSMISSION SYSTEMS, COMMUNICATION SYSTEMS), INTERFACES, PULSE CODE MODULATION, MULTIPLEXING, MAPPING, SIMULATION, MEMORY DEVICES, INFORMATION THEORY, SYNCHRONIZATION(ELECTRONICS), ANALOG SYSTEMS, DETECTORS, MATHEMATICAL MODELS (U)
IDENTIFIERS: *CODE CONVERTERS, COMPUTERIZED SIMULATION, READ ONLY MEMORIES, STRATEGIC COMMUNICATIONS, TACTICAL COMMUNICATIONS (U)

THE DESIGN, DEVELOPMENT, FABRICATION, AND TESTING OF ONE EXPLORATORY DEVELOPMENT MODEL OF THE DIGITAL INTERFACE CODE CONVERTER WAS COMPLETED. THE CODE CONVERTER INTERFACES TWO PCM MULTIPLEXERS WHICH UTILIZE DIFFERENT COMPANDING CHARACTERISTICS, BIT RATES, SYNCHRONIZATION CODE FORMATS, AND SIGNALLING FORMATS. THE AACOMS TD-352 AND TD-660 TACTICAL MULTIPLEXERS WHICH USE A 6-BIT QUANTIZED, 3 SEGMENT COMPANDED PCM FORMAT ARE DIGITALLY INTERFACED TO THE STRATEGIC TD-968 MULTIPLEXER WHICH USES AN 8-BIT QUANTIZED, 15 SEGMENT COMPANDED PCM FORMAT. CONVERSIONS BETWEEN THE TACTICAL IN-BAND TONE SIGNALLING FORMAT AND THE STRATEGIC E AND M SIGNALLING FORMAT ARE MADE BY THE CODE CONVERTER. THE CURRENT INTERFACE IS ON A SERIAL 12-CHANNEL BASIS AND A DESIGN PLAN HAS BEEN DEVELOPED FOR IMPLEMENTATION OF A 24-CHANNEL INTERFACE USING TD-204 OR TD-754 COMBINERS. RATE CONVERSION IS PERFORMED VIA FREQUENCY MULTIPLYING PHASE LOCKED LOOPS, FRAME SYNCHRONIZATION IS ESTABLISHED, A MAPPING BETWEEN THE 2 CODES IS PERFORMED VIA READ-ONLY MEMORIES, AND SIGNALLING INFORMATION CONVERSION IS PERFORMED VIA A PHASE LOCKED LOOP TONE DETECTOR AND A DIGITAL TONE GENERATOR. THE MAPPING OPTIMIZES PERFORMANCE IN THE AREAS OF SIGNAL-TO-IDLE CHANNEL NOISE RATIO, SIGNAL-TO-QUANTIZING NOISE RATIO. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 910 150 9/2 12/1
NAVAL WEAPONS CENTER CHINA LAKE CALIF

PROGRAM FOR THE TRANSFORMATION AND MANIPULATION OF DIGITIZED, PERIODIC DATA IN MULTIPLE CHANNEL ARRAYS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 73 162P CHRISTIANSEN,R. G. ;CRUISE, D. R. ;
REPT. NO. NWC-TP-5451
PROJ: AO3-3033/216C/2F00-311-008
MONITOR: GIDEP 347.00.00.00-X7-158

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTER PROGRAMS, *TRANSFORMATIONS(MATHEMATICS)), FACTOR ANALYSIS, DIGITAL SYSTEMS, DIGITAL COMPUTERS, FOURIER ANALYSIS, MATRICES(MATHEMATICS), SUBROUTINES, FLOW CHARTING, TIME SHARING (U)
IDENTIFIERS: DATA REDUCTION, DIGITAL FILTERS, NUMERICAL INTEGRATION, UNIVAC 1108 COMPUTERS (U)

THE USE OF THE DIGITAL DATA TRANSFORMATION (DDT) PROGRAM IS DESCRIBED. THE TRANSFORMATIONS OPTIONALLY PERFORMED INCLUDE DIGITAL FILTERING, NUMERICAL INTEGRATION, FACTOR ANALYSIS, AND DIGITAL TUNING. DATA CHANNELS MAY ALSO BE DELETED, RETAINED WITHOUT PROCESSING OR TRUNCATED IN TIME. THE PROGRAM MAY BE RUN IN THE DEMAND TERMINAL, TIME-SHARING MODE OR IN THE BATCH MODE ON THE UNIVAC EDPM 1108. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 911 395 17/1 9/2
TRACOR INC AUSTIN TEX

COMPUTER AIDED PROCESSING FOR ACTIVE AND PASSIVE SONAR SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
FEB 73 237P KEEDER,H. A. ;HAMM,D. W.
;
REPT. NO. TRACOR-173-AU-9519-U
CONTRACT: N00024-70-C-1274
PROJ: SF11-121, TRACOR-035-001
TASK: SF11-121-106, 8523

UNCLASSIFIED REPORT

DESCRIPTORS: (*SONAR SOUND ANALYZERS, *COMPUTER PROGRAMS), DATA PROCESSING, DOPPLER SYSTEMS, DIGITAL SYSTEMS, BROADBAND, NARROWBAND, ACTIVE, PASSIVE SYSTEMS, SONAR TARGETS, SONAR PERSONNEL, PROBABILITY, FLOW CHARTING, DETECTION, DIGITAL COMPUTERS, SUBROUTINES, ALGORITHMS, SIGNAL-TO-NOISE RATIO, MATHEMATICAL MODELS, INTEGRAL TRANSFORMS, DISPLAY SYSTEMS, COSTS (U)
IDENTIFIERS: AN/SQS-23, BEAMFORMERS, CDC 3200 COMPUTERS, COMPUTER AIDED DESIGN, COMPUTER PROGRAMS, DATA REDUCTION, FALSE TARGETS, FOURIER TRANSFORMATION, FORTRAN, SEQUENTIAL LIKELIHOOD RATIO, SIGNAL PROCESSING, UNIVAC 1108 COMPUTERS (U)

A GENERAL FRAMEWORK FOR A COMPUTER SYSTEM THAT ACCEPTS AND ANALYZES THE VAST QUANTITY OF DATA GENERATED BY A MODERN SONAR SUITE HAS BEEN DEVELOPED. THE OUTPUT OF THIS COMPUTER SYSTEM IS AN ARRAY OF ALERTING FUNCTIONS THAT MEASURE THE LIKELIHOOD THAT A GIVEN COORDINATE VECTOR IS THE LOCATION OF A TARGET. IN PARTICULAR, THE FRAMEWORK COMBINES THE OUTPUT OF ACTIVE HIGH- AND LOW-DOPPLER SONAR PROCESSORS AND WIDEBAND AND NARROWBAND PASSIVE PROCESSORS. THE ACTIVE HIGH- AND LOW-DOPPLER PROCESSOR PORTION WAS DEVELOPED AND TESTED DURING THIS STUDY. PERFORMANCE TESTS USING SIMULATED DATA ESTABLISHED THAT THE COMBINED ACTIVE PROCESSOR GAVE BETTER PERFORMANCE THAN EACH INDIVIDUAL PROCESSOR AND ITS SINGLE OUTPUT CHANNEL GAVE MORE UNIFORM PERFORMANCE OVER VARIATIONS IN TARGET DOPPLER THAN WAS AVAILABLE WITH THE TWO SEPARATE CHANNELS. AN OBSERVER TEST WAS CONDUCTED USING ARL PROCESSED AN/SQS-23 RECORDED SEA DATA WITH INJECTED TARGET SIGNALS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 912 998 1/3 9/3
AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO

AIRCRAFT AVIONICS (DIGITAL AVIONICS STUDY). (U)

DESCRIPTIVE NOTE: FINAL REPT.,
AFB 73 87P BRIGHT,BORIS F. ;LIST,
BERNARD ;SEN,WILLIAM ;GANGL,ERWIN C. ;
HAMMOND,MARVIN ;
REPT. NO. ASD-TR-73-1R-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ERRATA SHEET INSERTED.

DESCRIPTORS: (*AIRCRAFT EQUIPMENT, *ELECTRONIC EQUIPMENT), DIGITAL SYSTEMS, COMPUTERS, INTERFACES, MULTIPLEXING, DETECTORS, STANDARDIZATION, INTEGRATED SYSTEMS, WEAPON SYSTEMS, COSTS, RELIABILITY(ELECTRONICS), JET FIGHTERS, COST EFFECTIVENESS, AIR TRAFFIC CONTROL SYSTEMS, COMMUNICATION SATELLITES(ACTIVE), DATA TRANSMISSION SYSTEMS, RADAR, ELECTROOPTICS, NAVIGATION, VOICE COMMUNICATIONS, SYSTEMS ENGINEERING, DISPLAY SYSTEMS, CIRCULAR ERROR PROBABLE, VERY LOW FREQUENCY, RADAR BEACONS, FLIGHT CONTROL SYSTEMS, FAILURE(ELECTRONICS)(U)
IDENTIFIERS: *AVIONICS, COMPUTER ARCHITECTURE, COMPUTER HARDWARE, COMPUTER PROGRAMS, DATA MANAGEMENT (U)

CURRENT USAF AVIONICS ACQUISITION PRACTICES BREED *BLACK BOX* PROLIFERATION WITH ALL ITS ATTENDANT HIGH COSTS, LOW RELIABILITY, AND HEAVY O+M BURDEN. THIS IS HAPPENING WHILE DIGITAL TECHNOLOGY THREATENS TO INUNDATE THE SERVICE LOGISTIC CHANNELS. ENOUGH TECHNOLOGY IS IN HAND TO CREATE PROTOTYPE *DIGITAL AVIONICS*. SOFTWARE TURNS OUT TO BE THE SINGLE MOST DEFICIENT TECHNICAL AREA. THE BOARD CONCLUDES THAT PROPERLY EXERCISED AVIONICS GENERAL SYSTEMS ENGINEERING (GSE) CAN CAUSE THE MUCH NEEDED TURN ABOUT IN THIS AVIONICS SITUATION. THE BOARD HAS IDENTIFIED PRACTICES AND FACILITIES NEEDED TO ADEQUATELY CONDUCT AVIONICS GSE (CHAPTERS II, III, AND IV). THE BOARD RECOMMENDS A MODEST INVESTMENT OF APPROXIMATELY 10 MTS, TO INITIATE A *FULL SPECTRUM* GSE CAPABILITY AT ASD, THE PRINCIPAL USAF AIRCRAFT WEAPON ENGINEERING CENTER. CERTAIN PREREQUISITES MANDATORY FOR THE SUCCESS OF THE GSE ORGANIZATION HAVE BEEN IDENTIFIED BY THE BOARD. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 913 102 17/2 1/3
AIR FORCE AVIONICS LAB WRIGHT-PATTERSON AFB OHIO

A NEW DATA DISTRIBUTION SYSTEM FOR AIRCRAFT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. SEP 72-MAR 73, JUL 73 41P RUSSELL,BLINN W. ;
REPT. NO. AFAL-TR-73-133
PROJ: AF-6090
TASK: 609003

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTERCOMMUNICATION SYSTEMS, AIRCRAFT), (*DATA TRANSMISSION SYSTEMS, INTERCOMMUNICATION SYSTEMS), MULTIPLEXING, NIGHT FLIGHT, CODING, DECODING, AIRBORNE, DIGITAL SYSTEMS, SIMULATION, DIGITAL COMPUTERS, MATHEMATICAL MODELS, SYNCHRONIZATION(ELECTRONICS), FREQUENCY SHIFT KEYERS, WEIGHT, MAINTAINABILITY, RELIABILITY(ELECTRONICS), EFFICIENCY (U)
IDENTIFIERS: AVIONICS, AX AIRCRAFT, CODE DIVISION MULTIPLEX, COMPUTER HARDWARE, TIME DIVISION MULTIPLEX(U)

DURING A MISSION, A LARGE NUMBER OF AVIONIC SIGNALS ARE TRANSFERRED WITHIN A MILITARY AIRCRAFT. DATA SEPARATION AND ROUTING, HERETOFORE USUALLY HAVE BEEN ACHIEVED BY RUNNING A DEDICATED WIRE, POINT-TO-POINT, FOR EACH SIGNAL. THIS IS COSTLY IN TERMS OF CABLE WEIGHT, RELIABILITY, GROWTH FLEXIBILITY AND MAINTAINABILITY. THE AUTHOR PROPOSES A NEW INFORMATION DISTRIBUTION SYSTEM IN WHICH THE SIGNALS ARE SIMULTANEOUSLY ENCODED IN THE FREQUENCY, SPACE AND TIME DOMAINS. THIS APPROACH, CALLED THREE DIMENSIONAL ORTHOGONAL CODE DIVISION MULTIPLEXING, IS CONTRASTED WITH CONVENTIONAL TIME DIVISION MULTIPLEXING. POTENTIAL ADVANTAGES OF THE FORMER ARE POINTED OUT. THE REPORT DESCRIBES THE BASIC CONCEPTS IN GENERAL TERMS, THEN PRESENTS THE APPLICATION OF ONE VERSION OF THE DESIGN TO THE NIGHT A-X AIRCRAFT. IT IS CONCLUDED THAT THE (RUSHBY) APPROACH OFFERS CONSIDERABLE PROMISE FOR SOLVING THE COMPLEX INFORMATION MANAGEMENT AND DISTRIBUTION PROBLEMS ENCOUNTERED IN THE DESIGN OF MODERN AIRCRAFT. IT IS RECOMMENDED THAT RESOURCES BE ALLOCATED SUCH THAT THE CONCEPT, BY SIMULATION AND HARDWARE FABRICATION, CAN BE VERIFIED EXPERIMENTALLY IN THE LABORATORY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 914 476 17/2 9/5
GENERAL ATRONICS CORP PHILADELPHIA PA

DIGITAL CONFERENCING UNITS. (U)

DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 1, 16 APR-31 JUL 73,
AUG 73 36P GOUTMANN,MICHEL M. ;
REPT. NO. GAC-2373-2768-1
CONTRACT: DAAB07-73-C-0150
MONITOR: ECOM 0150-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*TELEPHONE SYSTEMS, SWITCHING CIRCUITS), (*SWITCHING CIRCUITS, DIGITAL SYSTEMS), (*VOICE COMMUNICATIONS, DATA PROCESSING), DELTA MODULATION, COST EFFECTIVENESS, DESIGN, SPEECH RECOGNITION, SPEECH TRANSMISSION, QUALITY CONTROL, ALGORITHMS, DIGITAL COMPUTERS, INPUT OUTPUT DEVICES, DEGRADATION, REDUCTION, AUTOMATIC GAIN CONTROL, COMPARATORS, SHIFT REGISTERS, TRANSMITTER RECEIVERS, LOW PASS FILTERS, DETECTION, VOLTAGE AMPLIFIERS, WAVEFORM GENERATORS (U)
IDENTIFIERS: *DIGITAL CONFERENCING UNITS, HANDSETS, CONFERENCING METHODS, DIGITAL SWITCHING SYSTEMS, *DIGITAL COMMUNICATION SYSTEMS, SPEECH PLAYBACK, SPEECH RECONSTRUCTOR, INTERRUPT CAPABILITY, ATAC(ADAPTIVE TIME ACCESS CONFERENCING), ADAPTIVE TIME ACCESS CONFERENCING, PDP 11/20 COMPUTERS, MESSAGE PROCESSING (U)

THIS FIRST QUARTERLY REPORT COVERS THE PERIOD OF 16 APRIL 1973 TO 31 JULY 1973 OF CONTRACT DAAB07-73-C-0150. THE EMPHASIS HAS BEEN IN THE ANALYSIS OF THE CVSD PROCESS WHICH MAY ENABLE A CONFERENCING ALGORITHM TO DETERMINE HOW THE PRESENCE OF INFORMATION CAN BE EASILY DETECTED AND CHANNELED TO THE CONFEREENCER OUTPUT. A CVSD HAS BEEN INTERFACED WITH A PDP 11/20 COMPUTER. THE DIGITAL VOICE SEQUENCE HAS BEEN ANALYZED AND ITS QUALITY TESTED BY PLAYBACK THROUGH THE CVDS RECONSTRUCTOR WHEN THE BER ON THE CONFEREES' LINES IS SUCH AS TO CAUSE CONCERN TO THE CONFERENCE QUALITY. A COST EFFECTIVE SYSTEM HAS EVOLVED AND IS PRESENTED IN THIS REPORT. THE NEXT PHASE OF THE CONTRACT WILL ESTABLISH ITS PERFORMANCE EXPERIMENTALLY.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 914 517 9/2 15/3.1 17/9
RAYTHEON CO WAYLAND MASS EQUIPMENT DIV

ADVANCED DIGITAL SIGNAL PROCESSOR DESIGN STUDY. VOLUME II. DESIGN CONCEPT. (U)

DESCRIPTIVE NOTE: FINAL REPT. 4 APR-4 NOV 73,
NOV 73 224P ALLEN,T. ;GLASS,J. ;HYNES, R. ;PERKINS,D. ;
REPT. NO. ER73-4426-VOL-2
CONTRACT: DAHC60-73-C-0065
PROJ: DA-62304-A

UNCLASSIFIED REPORT

DESCRIPTORS: (•DATA PROCESSING, DIGITAL SYSTEMS), MEMORY DEVICES, PULSE COMPRESSION, MATCHED FILTERS, WAVEFORM GENERATORS, DIGITAL TO ANALOG CONVERTERS, BANDWIDTH, COMPUTER PROGRAMMING, DATA STORAGE SYSTEMS, INTERFACES, ANTIMISSILE DEFENSE SYSTEMS, MULTIPLEXING, TRAILING EDGE, RADAR, POWER SUPPLIES, RELIABILITY(ELECTRONICS), SEQUENCES(MATHEMATICS), ALGORITHMS, VIDEO SIGNALS, SPECIFICATIONS, BROADBAND, SHIFT REGISTERS, DETECTION, LEADING EDGES (U)
IDENTIFIERS: •SIGNAL PROCESSING, DATA MANAGEMENT, SIGNAL PROCESSING, LOCAL OSCILLATORS, FLIP FLOPS, FOURIER TRANSFORMATION, BUTTERWORTH FILTERS, RANDOM ACCESS MEMORIES, METAL OXIDE SEMICONDUCTORS, POST PROCESSORS (U)

THIS VOLUME DESCRIBES A DESIGN CONCEPT OF A DIGITAL SIGNAL PROCESSOR DESIGNED TO MEET THE SPECIFIED SYSTEM REQUIREMENTS. THE CONCEPT USES THE TECHNIQUES RECOMMENDED AS A RESULT OF THE STUDIES DESCRIBED IN VOLUME I. EACH OF THE FOLLOWING SUBSYSTEMS ARE DESCRIBED SEPARATELY: DIGITAL WAVEFORM GENERATOR, IF CONVERSION, INPUT DATA MANAGEMENT, MATCHED FILTER, POST PROCESSOR, TEST SEQUENCE CONTROLLER, AND CONTROL AND INTERFACE. IN ADDITION, A MECHANICAL DESIGN CONCEPT, THERMAL ANALYSIS, AND RELIABILITY ANALYSIS FOR THE CONCEPT DESCRIBED ARE INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 914 519 9/5 9/1 20/9 17/5
13/1

BURROUGHS CORP PLAINFIELD N J ELECTRONIC COMPONENTS DIV

IMAGING PANEL SUBSYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT. OCT 71-MAR 73, SEP 73 49P MALONEY,THOMAS C. ;MILLER, DONALD E. ;SAXON,RICHARD A. ;
REPT. NO. T-218
CONTRACT: DAAK02-72-C-0091

UNCLASSIFIED REPORT

DESCRIPTORS: (*DISPLAY SYSTEMS, PLASMA MEDIUM), (*INFRARED DETECTORS, DISPLAY SYSTEMS), (*COLD CATHODE TUBES, GLOW DISCHARGES), (*ELECTRONIC SCANNERS, DIGITAL SYSTEMS), RESOLUTION, INFRARED IMAGES, BRIGHTNESS, INTENSITY, GRAPHICS, INPUT OUTPUT DEVICES, DIGITAL COMPUTERS, MEMORY DEVICES, CLOCKS, TIME SIGNALS (U)
IDENTIFIERS: GRAY SCALES, READ ONLY MEMORIES, CONTRAST, IMAGES (U)

A COMPACT IMAGING DISPLAY SUBSYSTEM WAS ENGINEERED AND FABRICATED. A GLOW DISCHARGE MATRIX DISPLAY PANEL, INCORPORATING INTERNAL ADDRESS ALONG ONE AXIS WAS USED AS THE DISPLAY DEVICE. THE PANEL CONTAINED 49,000 CELLS IN AN XY MATRIX ARRAY ON .025 INCH CENTERS. THE INTERNAL ADDRESS FEATURE RESULTED IN A 70% REDUCTION IN THE ELECTRONIC CIRCUIT COMPLEMENT AND PERMITTED PACKAGING OF THE SUBSYSTEM IN A COMPACT HOUSING 6 IN. X 12 IN. X 2 IN. IN SIZE. AN INPUT SIMULATOR WAS USED TO EVALUATE PERFORMANCE. ALL CONTRACT GOALS WERE ACHIEVED OR EXCEEDED. A PEAK INTEGRATED CELL BRIGHTNESS OF 34 FT. L. AND A BRIGHTNESS UNIFORMITY ACROSS THE PANEL OF BETTER THAN + OR - 10% WAS MEASURED. SIXTEEN DISCRETE SHADES OF GREY (ORANGE) WERE DISPLAYED. THE SUBSYSTEM DEMONSTRATES THE FEASIBILITY OF PROVIDING COMPACT, ECONOMICAL, POTENTIALLY VERY RUGGED PANEL DISPLAYS FOR INFRARED IMAGING SYSTEMS. INCORPORATION OF THE DISPLAY SUBSYSTEM INTO AN INFRARED IMAGING SYSTEM, TO DEMONSTRATE TOTAL SYSTEM COMPATABILITY, IS RECOMMENDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD- 917 047 17/2 9/2
COMPUTER SCIENCES CORP FALLS CHURCH VA

AUTODIN TIME SHARING EDITOR SYSTEM USER'S MANUAL. (U)

JAN 74 86P
REPT. NO. CSC-R4195960-1-1
CONTRACT: DCA100-73-C-0033

UNCLASSIFIED REPORT

DESCRIPTORS: (*TELEPHONE SYSTEMS, COMPUTER PROGRAMS), (*COMPUTER PROGRAMS, TIME SHARING), DIGITAL SYSTEMS, PULSE COMMUNICATIONS, SIMULATORS, HANDBOOKS, DIGITAL COMPUTERS, DISPLAY SYSTEMS, DEPARTMENT OF DEFENSE, USER NEEDS, MAGNETIC TAPE, FLOW CHARTING, FILES(RECORDS), COMMUNICATION SATELLITES, REAL TIME, EDITING, KEYBOARDS, NETWORKS, MESSAGE PROCESSING, ON LINE SYSTEMS, SPECIFICATIONS, ERRORS, FORTRAN (U)
IDENTIFIERS: *AUTODIN, FORTRAN 4 PROGRAMMING LANGUAGE, COBOL PROGRAMMING LANGUAGE, AUTOVON, IBM 370 COMPUTERS, IBM 360 COMPUTERS (U)

THE USE OF THE AUTODIN TIME SHARING EDITOR (TSODIN) SYSTEM IS DESCRIBED. THE SYSTEM PROVIDES THE CAPABILITY TO PERFORM REAL-TIME MODIFICATIONS TO DATA FILES USED BY THE DIN SIMULATOR TO DECREASE THE TIME REQUIRED TO PERFORM AUTODIN ENGINEERING STUDIES USING THE SIMULATOR. THE SYSTEM IS DESIGNED TO BE EXECUTED FROM AN IBM 3277 DISPLAY STATION AND INCLUDES PROGRAMS TO EDIT INPUT FILES AND PERFORM ERROR DIAGNOSTICS. THE EDIT FUNCTIONS INCLUDE ADDING, REPLACING, MODIFYING, AND DELETING RECORDS FROM INPUT FILES. THE SYSTEM RUNS ON AN IBM 370/155 COMPUTER USING THE OS/MVT OPERATING SYSTEM WITH THE STANDARD IBM TIME SHARING OPTION (TSO). (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD- 919 376 1/3 17/2.1
HUGHES AIRCRAFT CO FULLERTON CALIF

DRONE CONTROL AND DATA RETRIEVAL SYSTEM (DCDRS), PRELIMINARY DESIGN STUDY. VOLUME II. SYSTEM DESIGN. PART VI. RPV AVIONICS SUBSYSTEM DESIGN DESCRIPTION. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 74 292P MCCONE ,KENNETH D. ;
REPT. NO. FR-74-16-270/49082
CONTRACT: F33657-73-C-0664
MONITOR: ASD TR-74-4-VOL-2-PT-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, PART 7, AD-530 023.

DESCRIPTORS: (*DRONES, COMMAND AND CONTROL SYSTEMS), (*REMOTELY PILOTED VEHICLES, COMMAND AND CONTROL SYSTEMS), (*AVIONICS, DRONES), DATA PROCESSING, INFORMATION RETRIEVAL, AIR LAUNCHED, RECOVERY, COMMUNICATION AND RADIO SYSTEMS, LOW COSTS, RISK, REMOTE CONTROL, REMOTE SYSTEMS, DIGITAL SYSTEMS, PROCESSING EQUIPMENT, RADIO RELAY SYSTEMS, NAVIGATION, DIGITAL COMPUTERS, RELAYS, MULTIPLE OPERATION, LINE OF SIGHT, EXPENDABLE (U)
IDENTIFIERS: DCDRS(DRONE CONTROL AND DATA RETRIEVAL SYSTEM), *DRONE CONTROL AND DATA RETRIEVAL SYSTEM, HALE(HIGH ALTITUDE LONG ENDURANCE), HIGH ALTITUDE LONG ENDURANCE, RECOVERABLE TARGETS, EXPENDABLE TARGETS, MICROPROCESSORS, COMMUNICATION RELAYS (U)

HUGHES AIRCRAFT COMPANY, FULLERTON, CALIFORNIA HAS COMPLETED A SIX-MONTH PRELIMINARY DESIGN STUDY FOR THE DRONE CONTROL AND DATA RETRIEVAL SYSTEM (DCDRS) UNDER AIR FORCE CONTRACT. THE DESIGN OBJECTIVES OF THIS PROGRAM WERE BASED ON THE FUNDAMENTAL REQUIREMENTS OF LOW RISK AND LOW COST. WITHIN THESE CONSTRAINTS, THE RECOMMENDED DCDRS DESIGN PROVIDES SIGNIFICANT CAPABILITIES NOT NOW AVAILABLE TO THE AIR FORCE. OF PARTICULAR IMPORTANCE ARE THE NEW FEATURES OF SIMULTANEOUS MULTIPLE CONTROL, OPERATION IN AN ECM ENVIRONMENT, AND RELAYED COMMUNICATIONS TO EXTEND THE LINE-OF-SIGHT-RANGE. IN ADDITION TO THE PRELIMINARY SYSTEM DESIGN, OVER FORTY TRADE STUDIES AND ANALYSES WERE CONDUCTED TO SUBSTANTIATE THE DESIGN DECISIONS.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMO7

AD- 919 804 1/3 17/7 17/2 9/2
17/2.1
HUGHES AIRCRAFT CO FULLERTON CALIF

DRONE CONTROL AND DATA RETRIEVAL SYSTEM (DCDRS), PRELIMINARY DESIGN STUDY FINAL REPORT. VOLUME III. TRADE STUDIES AND ANALYSES. PART IX. AVIONICS TRADE STUDY/ ANALYSIS REPORT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. 6 MAR-6 OCT 73, APR 74 110P MCCONE,KENNETH D. :
REPT. NO. FR-74-16-271/49097
CONTRACT: F33657-73-C-0664
MONITOR: ASD TR-74-4-VOL-3-PT-9

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, PART 10, AD-919 801.

DESCRIPTORS: (•REMOTELY PILOTED VEHICLES, TRADE OFF ANALYSES), (•DIGITAL COMPUTERS, •AVIONICS), (•MINICOMPUTERS, DIGITAL SYSTEMS), (•DATA TRANSMISSION SYSTEMS, TELEMETERING DATA), (•DATA PROCESSING, PROGRAMMING LANGUAGES), REMOTE CONTROL, SYSTEMS ENGINEERING, RADIO LINKS, ASSEMBLY, INTERFACES, COMPUTER PROGRAMS, RADIO RELAY SYSTEMS, CODING, FLIGHT CONTROL SYSTEMS, LAUNCHING, RECOVERY (U)
IDENTIFIERS: DCDRS(DRONE CONTROL AND DATA RETRIEVAL SYSTEM), DRONE CONTROL AND DATA RETRIEVAL SYSTEM, DRONE CONTROL FACILITIES, •ONBOARD COMPUTERS, JOVIAL PROGRAMMING LANGUAGE, ASSEMBLY LANGUAGES (U)

THE EXTENSIVE ONBOARD PROCESSING REQUIRED OF THE AVIONICS SUBSYSTEM IS BEST ACCOMPLISHED WITH DIGITAL RATHER THAN ANALOG IMPLEMENTATION. THE FOLLOWING SELECTIONS ARE MADE FOR THE SUBSYSTEM: (1) USE OF THE ROLM 1602 AS THE AIRBORNE MINICOMPUTER; (2) USE OF ASSEMBLY LANGUAGE AS THE PROGRAMMING LANGUAGE FOR THE 1973 TIME FRAME AND JOVIAL FOR THE 1978 TIME FRAME; AND (3) USE OF A MODERATELY DISTRIBUTED INTERFACE SYSTEM FOR THE 1973 TIME FRAME AND A FEDERATED INTERFACE SYSTEM FOR THE 1978 TIME FRAME. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A000 180 9/2 14/4
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

AUTOMATED SYSTEM FOR THE CONTROL OF DIGITAL MODULES OF COMPUTERS. (U)

OCT 74 25P GROHMAN,D. M. ;SERGEEV,B. G. ;

REPT. NO. FTD-MT-24-1633-74
PROJ: FTD-T74-05-12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF UPRAVLYAYUSHCHIE SISTEMY I MASHINY (USSR) NI P86-93 JAN/FEB 73, BY CHARLES T. OSTERTAG, JR.

DESCRIPTORS: *DIGITAL COMPUTERS, *TEST EQUIPMENT, AUTOMATION, TEST METHODS, DIGITAL SYSTEMS, MODULES(ELECTRONICS), TRANSLATIONS, USSR (U)

THE SYSTEM EXAMINED IN THE ARTICLE IS ABLE TO INSURE EFFECTIVE CONTROL AND DIAGNOSTICS OF THE FAILURES OF MODULES AND ASSEMBLIES BY MEANS OF DIGITAL COMPUTER TECHNOLOGY. IT MAKES IT POSSIBLE TO SUBSTANTIALLY REDUCE THE EXPENDITURES OF PREPARATION TIME OF INFORMATION NECESSARY FOR CONTROL, TO ACCELERATE BY MANY TIMES THE PROCESS OF CONTROL, TO STANDARDIZE THE PROCEDURES AND THE MEANS OF CONTROL DURING THE PRODUCTION AND OPERATION OF TSU. THE USE OF THE SYSTEM DESCRIBED DURING THE DEVELOPMENT AND PRODUCTION OF ONE OF THE FIRST SOVIET COMPUTER COMPLEXES OF THE THIRD GENERATION (M-4,000 ASVT) SHOWED ITS HIGH EFFECTIVENESS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A002 686 1/3 1/4
HONEYWELL INC MINNEAPOLIS MINN SYSTEMS AND RESEARCH CENTER

DIGITAL FLIGHT CONTROL SYSTEM FOR TACTICAL FIGHTERS. (U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 72-DEC 73,
JUL 74 424P KONAR,A FERIT ;GAABO,
ROBERT J. ;BENDER,MARY A. ;SMITH,FRED L. ;
WOLF,JAMES D. ;
REPT. NO. F0121-IR1, DR005
CONTRACT: F33615-72-C-1058
PROJ: AF-1987
TASK: 198701
MONITOR: AFFDL TR-74-69

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD/A-002 320 AND VOLUME 2, AD/A-002 327.

DESCRIPTORS: *TACTICAL AIRCRAFT, *JET FIGHTERS, *FLIGHT CONTROL SYSTEMS, DIGITAL SYSTEMS, OPEN LOOP SYSTEMS, CLOSED LOOP SYSTEMS, FLIGHT SIMULATION, COMPUTER PROGRAMMING (U)
IDENTIFIERS: F-4 AIRCRAFT (U)

THE DIGITAL FLIGHT CONTROL SYSTEMS FOR TACTICAL FIGHTERS PROGRAM IS A DEVELOPMENT PROGRAM THE OBJECTIVE OF WHICH IS TO DEFINE THE TECHNOLOGY NECESSARY TO APPLY DIGITAL FLIGHT CONTROL TECHNIQUES TO THE THREE-AXIS, MULTIPLE FLIGHT CONTROL CONFIGURATION DEMANDS OF ADVANCED FIGHTER AIRCRAFT. ANALYSIS EFFORTS HAVE DEFINED POWERFUL ANALYTICAL DF C'S MODELS AND COMPUTER PROGRAM TOOLS WHICH PERMIT DETERMINATION OF FLIGHT CONTROL SYSTEM PERFORMANCE AS A FUNCTION OF COMPUTATIONAL PARAMETERS -- WORD LENGTH, SAMPLE RATE, AND COMPUTATIONAL DELAYS. AN EXERCISE OF THE PROGRAMS USING THE F-4 AS A MODEL INDICATED 100 ITERATIONS PER SECOND AS SATISFACTORY FOR THE LONGITUDINAL AXIS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A002 687 1/4 1/3
HONEYWELL INC MINNEAPOLIS MINN GOVERNMENT AND AERONAUTICAL PRODUCTS DIV

DIGITAL FLIGHT CONTROL SYSTEMS FOR TACTICAL FIGHTERS. VOLUME III. DIGITAL FLIGHT CONTROL SYSTEM DESIGN CONSIDERATION. (U)

DESCRIPTIVE NOTE: INTERIM REPT. FEB 72-JUN 73, JUN 74 437P BENDER,M. A. ;GAABO,R. J. ;SMITH,F. L. ;
REPT. NO. GAPD-F-0131-183
CONTRACT: F33615-72-C-1058
PROJ: AF-1987
TASK: 198701
MONITOR: AFFDL TR-73-119-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2. AD/A-002 327.

DESCRIPTORS: *TACTICAL AIRCRAFT, *JET FIGHTERS, *FLIGHT CONTROL SYSTEMS, DIGITAL SYSTEMS, DATA PROCESSING, MULTIPLEXING, ELECTROMAGNETIC INTERFERENCE, COMPUTER PROGRAMS (U)
IDENTIFIERS: F-4 AIRCRAFT (U)

THE DIGITAL FLIGHT CONTROL SYSTEMS FOR TACTICAL FIGHTERS PROGRAM IS A DEVELOPMENT PROGRAM WHICH DEFINES THE TECHNOLOGY NECESSARY TO APPLY DIGITAL FLIGHT CONTROL TECHNIQUES TO THE THREE-AXIS, MULTIPLE FLIGHT CONTROL CONFIGURATION DEMANDS OF ADVANCED FIGHTER AIRCRAFT. ANALYSIS EFFORTS TO DATE HAVE DEFINED POWERFUL COMPUTER PROGRAM TOOLS WHICH PERMIT DETERMINATION OF FLIGHT CONTROL SYSTEM PERFORMANCE AS A FUNCTION OF COMPUTATIONAL PARAMETERS -- WORD LENGTH, SAMPLE RATE, AND COMPUTATIONAL DELAYS. AN EXERCISE OF THE PROGRAMS USING THE F-4 AS A MODEL INDICATED 100 ITERATIONS PER SECOND AS SATISFACTORY FOR THE LONGITUDINAL AXIS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A004 211 17/2
PURDUE UNIV LAFAYETTE IND

PERFORMANCE MONITORS FOR DIGITAL COMMUNICATIONS SYSTEMS PART II. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
DEC 74 177P LEON,B. J. ;HAMMOND,J.
L. ;RODE,R. B. ;SEARS,W. E. ;
CONTRACT: F30602-72-C-0438
MONITOR: RADC TR-74-318

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH GEORGIA INST. OF TECH., ATLANTA.

DESCRIPTORS: *PULSE COMMUNICATIONS, DIGITAL SYSTEMS, MONITORS, STANDARDS, MONITORING, COMPUTERIZED SIMULATION, COMMUNICATIONS NETWORKS, SYNCHRONIZATION(ELECTRONICS), COMPUTER PROGRAMS (U)

THE REPORT CONSISTS OF THREE PARTS. THE FIRST PART INVESTIGATES PERFORMANCE MONITORS FOR A DIGITAL SYSTEM THAT USES A THREE-LEVEL PARTIAL RESPONSE WAVE FORM FOR DIGITAL SIGNALING. A HYBRID SIMULATION OF SUCH A SYSTEM WAS MADE AND VARIOUS METHODS OF AMPLIFYING THE BIT ERROR RATE WERE INVESTIGATED. IT WAS FOUND THAT A NULL ZONE DETECTION SCHEME WAS THE BEST MONITOR. THE SECOND SECTION OF THE REPORT INVESTIGATES AN EXTENSION OF THE PSEUDO-ERROR CONCEPT FROM DCEO H700-1 TO A MONITOR SCHEME THAT EXAMINES THE RECEIVED SIGNAL AND CLASSIFIES THE SIGNAL IN VARIOUS BINS. THE REPORT DISCUSSES THE RELATION BETWEEN THE NUMBER OF SIGNALS RECEIVED IN EACH BIN WITH VARIOUS SOURCES OF SYSTEM DEGRADATION. THIS APPROACH SHOWS PROMISE FOR FAULT ISOLATION. THE THIRD SECTION OF THE REPORT DEALS WITH THE PROBLEM OF SYNCHRONIZATION IN A DIGITAL SYSTEM. IT SHOWS HOW SYNCHRONIZATION CAN BE MONITORED BY ESTIMATING THE STATISTICAL PARAMETERS OF BUFFER STORAGE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A005 293 6/2 9/2
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

EVALUATION OF AN ACOUSTICAL X-Y DIGITIZER FOR USE IN BIOMEDICAL DATA REDUCTION TASKS. (U)

DESCRIPTIVE NOTE: FINAL REPT. NOV 73-JUN 74,
DEC 74 11P STOWE,DARWELL E. ;BALUSEK,
ROBERT A. ;THREATT,DOUGLAS M. ;
REPT. NO. SAM-TR-74-63
PROJ: AF-6319
TASK: 631903

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA REDUCTION, *ACOUSTIC RECORDING SYSTEMS, *DATA PROCESSING EQUIPMENT, *BIOMEDICINE, DATA ACQUISITION, STATISTICAL ANALYSIS, GRAPHICS, GRIDS(COORDINATES), DIGITAL SYSTEMS, MINICOMPUTERS, ANALOG TO DIGITAL CONVERTERS (U)
IDENTIFIERS: *ACOUSTIC PENS (U)

AIR FORCE BIOMEDICAL DATA ARE OFTEN OBTAINED IN HARD COPY, GRAPHIC, OR PICTORIAL FORM. MANUAL DATA REDUCTION IS LABORIOUS AND TIME CONSUMING. THE WORK REPORTED HERE WAS DIRECTED AT THE DEVELOPMENT OF METHODS FOR UTILIZING A NEW PRINCIPLE (ACOUSTIC RANGING) FOR RETRIEVING (DIGITIZING) X-Y COORDINATE VALUES FROM STRIP CHARTS, GRAPHS, X-RAY PHOTOGRAPHS, OR DRAWINGS. INCLUDED ARE THE RESULTS OF A STATISTICAL STUDY DESIGNED TO ASSESS THE RESOLUTION, PRECISION, BIAS, AND LINEARITY OF THE SYSTEM. THESE RESULTS VERIFY THAT THE QUALITY OF THIS DIGITIZING PROCESS IS MORE THAN ADEQUATE FOR USE ON MOST BIOMEDICAL APPLICATIONS ENCOUNTERED AT THE SCHOOL. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-A005 523 13/10
DRAPER (CHARLES STARK) LAB INC CAMBRIDGE MASS

HYDROFOIL UNIVERSAL DIGITAL AUTOPILOT (HUDAP). (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUL 73-31 MAR 74 ON PHASE 2,
MAY 74 255P GAMBER,FREDERICK S. ;
MEDEIROS,ROGER ;
REPT. NO. R-817
CONTRACT: N00014-74-C-0009

UNCLASSIFIED REPORT

DESCRIPTORS: *HYDROFOIL CRAFT, *AUTOMATIC PILOTS, DIGITAL SYSTEMS, DIGITAL COMPUTERS, ELECTRONIC EQUIPMENT, CABLE ASSEMBLIES, COMPUTER APPLICATIONS, SEA TESTING (U)
IDENTIFIERS: PCH1 VESSEL (U)

THE HYDROFOIL UNIVERSAL DIGITAL AUTOPILOT (HUDAP) ASSEMBLY WAS USED TO DEMONSTRATE THE FEASIBILITY OF USING A DIGITAL COMPUTER AS PART OF AN AUTOPILOT ASSEMBLY TO CONTROL A HIGH PERFORMANCE, SUBMERGED FOIL HYDROFOIL CRAFT. THIS REPORT DOCUMENTS THE HUDAP DEVELOPMENT EFFORT AND DEMONSTRATION, THE CONCLUSIONS REACHED FROM THE DEVELOPMENT AND RECOMMENDATIONS FOR PRODUCT IMPROVEMENT AND EXPANSION. IN ADDITION, THE CONFIGURATION OF BOTH THE HARDWARE AND SOFTWARE USED IN THE DEMONSTRATIONS, A DELINEATION OF EXPANSION CAPABILITIES OF THE SYSTEM, AND A DISCUSSION OF SEVERAL REAL OR POTENTIAL PROBLEM AREAS ARE PRESENTED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A008 184 17/7
DRAPER (CHARLES STARK) LAB INC CAMBRIDGE MASS

DIGITAL IMUE STUDY. (U)

DESCRIPTIVE NOTE: FINAL REPT. DEC 73-JUN 74,
SEP 74 85P FOSTER,EDMUND R. ;COMSTOCK,
ROBERT H. ;
REPT. NO. R-841
CONTRACT: F04701-73-C-0019
MONITOR: SAMSO TR-75-87

UNCLASSIFIED REPORT

DESCRIPTORS: *INERTIAL SYSTEMS, STABILIZED PLATFORMS, DIGITAL SYSTEMS, MEASUREMENT, SERVOMECHANISMS, WAVEFORM GENERATORS, TEMPERATURE CONTROL, ANALOG TO DIGITAL CONVERTERS, MICROCOMPUTERS, INERTIAL GUIDANCE, STABILIZATION (U)

THREE APPLICATIONS OF DIGITAL TECHNOLOGY TO AN INERTIAL MEASUREMENT UNIT (IMU) WERE STUDIED - THE STABILIZATION SERVO, SINEWAVE GENERATION, AND TEMPERATURE CONTROL. THE SHIP (SMALL HARDENED INERTIAL PLATFORM) SERVED AS A VEHICLE FOR THIS STUDY, BUT THE TECHNIQUES DEVELOPED ARE APPLICABLE TO A WIDE RANGE OF GUIDANCE SYSTEMS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-A010 848 9/4 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS

COMPUTER ARCHITECTURE FOR SIGNAL PROCESSING, (U)

OCT 74 10P ALLEN,JONATHAN ;
CONTRACT: DAAB07-74-C-0630, N00014-67-A-0204-0064

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN PROCEEDINGS OF THE IEEE, V63 N4 P624-633 APR 75.

DESCRIPTORS: *SIGNAL PROCESSING, *COMPUTER ARCHITECTURE, DIGITAL SYSTEMS, ALGORITHMS, PROGRAMMING LANGUAGES, REAL TIME, DIGITAL COMPUTERS, COSTS, HIGH RATE, LOGIC CIRCUITS, INTEGRATED CIRCUITS, REPRINTS, MEMORY DEVICES (U)

THERE IS AN INCREASING TREND TO USE DIGITAL SIGNAL-PROCESSING TECHNIQUES TO SOLVE REAL-TIME PROBLEMS. THIS LEADS TO A NEED FOR PROCESSORS WHICH CAN PERFORM COMPLICATED SIGNAL-PROCESSING ALGORITHMS ON LARGE AMOUNTS OF DATA AT HIGH SPEEDS. COMPUTER ARCHITECTURES FOR THIS PURPOSE ARE SHOWN TO ARISE FROM A CONSIDERATION OF SEVERAL STRUCTURAL FACTORS, INCLUDING TECHNOLOGY, THE ALGORITHMS TO BE PERFORMED, DATA STRUCTURES, AND THE PROGRAMMING LANGUAGE. WHEN THESE FACTORS ARE COMPLEMENTARY, EFFICIENT YET ECONOMICAL DESIGNS RESULT. THE STRUCTURAL FACTORS ARE DESCRIBED, AND THEN SEVERAL COMPUTER DESIGNS ARE DISCUSSED IN LIGHT OF THIS CONCEPTUAL FRAMEWORK. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A013 663 9/5 9/2
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

AN ANALYSIS OF A DIGITAL POSITIONING SYSTEM. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
JUN 75 130P NANDIDARBHA,YONGYUDHA ;

UNCLASSIFIED REPORT

DESCRIPTORS: *SERVOMECHANISMS, *DATA PROCESSING EQUIPMENT, *DIGITAL COMPUTERS, DIGITAL SYSTEMS, COMPUTERIZED SIMULATION, COSTS, SHAFTS(MACHINE ELEMENTS), THESES, ANALOG SYSTEMS, ANALOG TO DIGITAL CONVERTERS, DIGITAL TO ANALOG CONVERTERS, CODING, SERVOAMPLIFIERS, CONTROL SYSTEMS, POSITIONING DEVICES(MACHINERY) (U)
IDENTIFIERS: IBM 360 COMPUTERS (U)

DIGITAL TECHNIQUES CAN BE EFFECTIVELY AND ECONOMICALLY USED FOR CONTROL PURPOSE. A DIGITAL POSITIONING SYSTEM IS SIMULATED, STUDIED, AND THE RESULTS COMPARED WITH THE RESULTS FROM COMPARABLE ANALOG SYSTEM. CONVENTIONAL COMPENSATION METHODS ARE USED TO COMPENSATE THE COMPARABLE ANALOG SYSTEM AND THE RESULTS IS USED IN SIMULATION STUDY OF THE DIGITAL SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A013 870 9/2 12/1
ARMY COMPUTER SYSTEMS COMMAND FORT BELVOIR VA

COMBAT SERVICE SUPPORT SYSTEM TIMING STUDY. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
75 92P KERNS,WILLIAM D. ;
REPT. NO. USACSC-ATS-75-01
PROJ: DA-S-X-865803-MY-10
TASK: S-X-865803-MY-1001

UNCLASSIFIED REPORT

DESCRIPTORS: *DIGITAL COMPUTERS, *SYSTEMS ENGINEERING, *COMPUTER PROGRAMS, *REGRESSION ANALYSIS, *DATA PROCESSING, CONTROL SEQUENCES, TIME, COMPUTERIZED SIMULATION, PERFORMANCE(ENGINEERING), INPUT OUTPUT PROCESSING, SYSTEMS ENGINEERING, LOGISTICS SUPPORT, ARMY PERSONNEL, MAINTENANCE, METHODOLOGY, LIFE CYCLES, MATHEMATICAL PREDICTION, COMPUTER AIDED DESIGN, ESTIMATES (U)
IDENTIFIERS: *COMPUTER RUNTIMES, *LINEAR REGRESSION ANALYSIS, WORKLOADS, CASE(COMPUTER AIDED SYSTEMS EVALUATION), COMPUTER AIDED SYSTEMS EVALUATION, IBM 360/30 COMPUTERS, *COMPUTER PERFORMANCE EVALUATION (U)

THIS REPORT DESCRIBES A STUDY CONDUCTED TO FORECAST THE NUMBER OF HOURS REQUIRED TO PROCESS THE PERSONNEL, LOGISTICS, AND MAINTENANCE SOFTWARE SYSTEMS FOR A DIVISION USING THE COMBAT SERVICE SUPPORT SYSTEM (CS SUB 3) IBM 360/30 HARDWARE CONFIGURATION UNDER AVERAGE TO MAXIMUM WORKLOADS. THESE SYSTEMS AND THEIR COMPONENT SUBSYSTEMS RANGE IN STATE OF DEVELOPMENT FROM THE CONCEPTUAL TO OPERATIONAL, REQUIRING USE OF SEPARATE FORECASTING METHODOLOGIES BASED ON THE LIFE CYCLE OF THE SOFTWARE. FOR THE PERSONNEL SYSTEM, LINEAR REGRESSION TECHNIQUES WERE USED TO PREDICT RUNTIMES BASED ON EXPECTED VOLUMES OF INPUT AND OUTPUT. A SIMULATION MODEL WAS CONSTRUCTED USING THE COMPUTER AIDED SYSTEMS EVALUATION (CASE) PACKAGE TO PREDICT RUNTIMES FOR THE LOGISTICS SYSTEM. RUNTIMES FOR THE MAINTENANCE SYSTEM WERE PREDICTED BY CASE SIMULATION AND BY ANALYST ESTIMATES. THE CONCLUSION OF THIS STUDY IS THAT THE CS SUB 3 HARDWARE SYSTEM WILL BE ADEQUATE UNDER AVERAGE WORKLOADS BUT MAY BECOME SATURATED UNDER MAXIMUM WORKLOADS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A014 200 9/2
CIVIL ENGINEERING LAB (NAVY) PORT HUENEME CALIF

TRANSIENT SUSCEPTIBILITY TEST OF AN/GYK-3(V) DIGITAL DATA PROCESSING SYSTEM AT SKAGGS ISLAND. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL NOTE JUN-DEC 74, AUG 75 36P SMITH,M. N. ;
REPT. NO. CEL-TN-1397

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING EQUIPMENT, DIGITAL SYSTEMS, TRANSIENTS, POWER SUPPLIES, NAVAL SHORE FACILITIES, CALIFORNIA, RELIABILITY(ELECTRONICS), DIGITAL COMPUTERS, MEMORY DEVICES, DISPLAY SYSTEMS (U)
IDENTIFIERS: AN/GYK-3(V) (U)

SUSCEPTIBILITY TESTS WERE MADE ON AN AN/GYK-3(V) DIGITAL DATA PROCESSING SYSTEM AT THE NAVAL SECURITY GROUP HEADQUARTERS AT SKAGGS ISLAND, CALIFORNIA, USING POWER TRANSIENT SYNTHESIZER AND POWER TRANSIENT MONITOR DEVELOPED BY THE CIVIL ENGINEERING LABORATORY. THESE TESTS WERE TO DETERMINE THE QUALITY OF ELECTRICAL POWER REQUIRED BY THE SYSTEM TO OPERATE WITH A MINIMUM OF FAILURES. EIGHT COMPONENTS OF THE SYSTEM WERE TESTED INDIVIDUALLY, AND THEN THE SYSTEM AS A WHOLE WAS TESTED. RESULTS ARE DISCUSSED IN THE REPORT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-A014 935 9/2 12/1
HONEYWELL INC MINNEAPOLIS MINN SYSTEMS AND RESEARCH CENTER

THEORY OF FAULT TOLERANCE. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. AUG 74-AUG 75,
SEP 75 114P JACK,L. A. ;HEIMERDINGER,
W. L. ;JOHNSON,M. D. ;
REPT. NO. F0326-74
CONTRACT: N00014-75-C-0011

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER PROGRAMS, *NETWORKS, *TRANSFORMATIONS(MATHEMATICS), *CONTROL THEORY, TOLERANCE, PROGRAMMING LANGUAGES, DIGITAL SYSTEMS, ERRORS, CORRECTIONS, COMPUTER GRAPHICS, COMPUTER LOGIC, COMPUTER ARCHITECTURE, DIGITAL COMPUTERS (U)
IDENTIFIERS: *FAULT TOLERANCE, FAULT ISOLATION, TREES(MATHEMATICS), FAULT DETECTION, FAULT TOLERANT COMPUTING, FAULT TREE ANALYSIS, FAULT TOLERANCE THEORY (U)

THE FIRST PHASE OF A LONG RANGE PROGRAM TO DEVELOP A THEORETICAL BASE FOR THE DESIGN AND EVALUATION OF FAULT TOLERANT DIGITAL SYSTEMS IS SUMMARIZED. THE PURPOSE OF THIS EFFORT WAS TO INVESTIGATE THE FEASIBILITY OF REPRESENTING FAULT TOLERANT PHENOMENA WITH TWO EXISTING LABELED GRAPH MODELS, LOGOS AND PETRI NETS. LOGOS AND PETRI NET MODELS WERE USED TO REPRESENT SYSTEMS AT A FUNCTIONAL LEVEL. FUNCTIONAL FAULTS WERE HYPOTHESIZED TO DESCRIBE THE EFFECT OF A FAULT MECHANISM FROM A FUNCTIONAL VIEWPOINT. FUNCTIONAL FAULTS WERE FOUND TO PROVIDE HIGH LEVERAGE OVER TRADITIONAL 'STUCK-AT-ONE' OR 'STUCK-AT-ZERO' ANALYSIS. MODELS WERE DEVELOPED WHICH DESCRIBE: (1) THE NON-FAULTY SYSTEM FUNCTION; (2) THE FAULTY SYSTEM OPERATION; (3) FAULT DETECTION TECHNIQUES; AND (4) FAULT RECOVERY SCHEMES. THE RESULTS OF MODELING SEVERAL CANDIDATE FAULT TOLERANT SYSTEM PROBLEMS REAFFIRMED OUR BELIEF IN THE UTILITY OF LABELED GRAPHS AS A REPRESENTATION LANGUAGE FOR FAULT TOLERANT PHENOMENA. WE FOUND BOTH MODELS CONCISELY DESCRIBED THE STRUCTURE AND DYNAMICS OF A CONTROL SYSTEM AND PROVIDED INSIGHT INTO THE EFFECT OF FAULT DETECTION AND RECOVERY MECHANISMS ON A GIVEN FAULT MECHANISM. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-A016 874 16/4
ARMY MISSILE RESEARCH DEVELOPMENT AND ENGINEERING LAB
REDSTONE ARSENAL ALA GUIDANCE AND CONTROL DIRECTORATE

DIGITAL AUTOPILOT SAMPLE RATE SELECTION
BASED ON CONTROL SYSTEM REQUIREMENTS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
MAY 75 12P HERBERT,EDWARD E. ;
REPT. NO. RG-75-48

UNCLASSIFIED REPORT

DESCRIPTORS: *AUTOMATIC PILOTS, DIGITAL SYSTEMS,
MICROCOMPUTERS, DIGITAL COMPUTERS, STABILITY,
COMPENSATION, SAMPLING, RATES, CONTROL THEORY,
GUIDED MISSILES (U)

THE PURPOSE OF THIS PAPER IS TO DISCUSS SOME
CONSIDERATIONS IN THE SELECTION OF A SAMPLE RATE FOR
THE DIGITAL AUTOPILOT. THE MISSILE AUTOPILOT DESIGN
WHICH INCORPORATES A DIGITAL COMPUTER OR
MICROPROCESSOR(S) TO IMPLEMENT THE STABILITY
COMPENSATION EQUATIONS REQUIRES CONSIDERATIONS OVER
AND ABOVE THOSE MADE FOR ANALOG COMPUTER AUTOPILOTS.
SOME OF THESE CONSIDERATIONS ARE: THE SELECTION
OF SAMPLING FREQUENCY, THE A/D CONVERTER
WORDLENGTH, THE PHASE LAG CONTRIBUTED BY THE ZERO
ORDER DATA HOLD (I.E., THE A/D CONVERTER),
THE TRANSPORT LAG IN THE DIGITAL COMPUTER, AND THE
EFFECTS OF SAMPLING HIGH FREQUENCY SENSOR AND
STRUCTURAL (BENDING) NOISE (FOLDOVER OR
ALIASING). (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A017 493 9/2 8/4
ARMY ENGINEER TOPOGRAPHIC LABS FORT BELVOIR VA

ANALOG GRAPHIC PROCESSING FOR 3-D TERRAIN DISPLAYS, PROFILES, AND ELEVATION LAYER TINTS. (U)

DESCRIPTIVE NOTE: RESEARCH NOTE MAR-APR 75,
OCT 75 28P MURPHY,L. P. ;TRELINSKIE,
E. G. , JR;
REPT. NO. ETL-0026
PROJ: DA-4-A-762707-A-854
TASK: 4-A-762707-A-85406

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER GRAPHICS, *DISPLAY SYSTEMS, ANALOG SYSTEMS, MAPPING, DIGITAL SYSTEMS, LAYERS, DATA PROCESSING, THREE DIMENSIONAL, REAL TIME, PROFILES, LINE OF SIGHT (U)
IDENTIFIERS: MAP OF THE EARTH FLIGHT, TINT (U)

THIS REPORT BRIEFLY DESCRIBES A COMPUTERIZED TECHNIQUE FOR TRANSFORMING DIGITAL ELEVATION DATA INTO GRAY-LEVEL-ENCODED FILM. THIS FILM IS THEN USED FOR NEAR-REAL-TIME ANALOG GRAPHIC (NONDIGITAL) PROCESSING FOR THE DISPLAY OF TERRAIN PERSPECTIVES, PROFILES, AND ELEVATION LAYER TINTS. THIS REPORT CONCLUDES THAT THIS APPROACH OFFERS CONSIDERABLE POTENTIAL, AT BASE AND/OR FIELD LEVELS, FOR PRODUCING SPECIAL MAP GRAPHICS, DISPLAYS, AND ANALYZING TERRAIN CONDITIONS FOR LINE-OF-SIGHT PROBLEMS OR MAP-OF-THE-EARTH FLIGHT PLANS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A017 569 17/2.1
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

THE LINCOLN DIGITAL VOICE TERMINAL SYSTEM. (U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,
AUG 75 70P BLANKENSHIP,PETER E. ;
HOFSTETTER,EDWARD M. ;HUNTOON,ALBERT H. ;
MALPASS,MARILYN L. ;SENEFF,STEPHANIE ;
REPT. NO. TN-1975-53
CONTRACT: F19628-76-C-0002
PROJ: AF-7820
MONITOR: ESD TR-75-253

UNCLASSIFIED REPORT

DESCRIPTORS: *VOCODERS, SPEECH COMPRESSION, SPEECH, PROCESSING, DIGITAL SYSTEMS, VOICE COMMUNICATIONS, MINICOMPUTERS, COMPUTER PROGRAMMING, REAL TIME, INTEGRATED SYSTEMS, COMMUNICATION TERMINALS (U)
IDENTIFIERS: *SPEECH PROCESSORS, COMPANDOR TRANSMISSION (U)

AN ULTRA-HIGH PERFORMANCE PROGRAMMABLE SPEECH PROCESSOR, CONSISTING IN THE MAIN OF A CUSTOM DESIGNED 55-NSEC MICROCOMPUTER, HAS BEEN DESIGNED AND CONSTRUCTED. TO DATE, FIVE REAL-TIME SPEECH COMPRESSION PROGRAMS HAVE BEEN IMPLEMENTED AND EVALUATED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A017 742 17/8
SYSTEMS RESEARCH LABS INC DAYTON OHIO

A DIGITAL SYSTEM FOR THE CHARACTERIZATION OF ELECTRO-OPTICAL SENSORS. (U)

DESCRIPTIVE NOTE: INTERIM REPT. JUL-DEC 74,
SEP 75 85P ROHR,LAWRENCE ;WEINHOLD,JOHN
;
CONTRACT: F33615-73-C-1135
PROJ: AF-2004
TASK: 200405
MONITOR: AFAL TR-75-58

UNCLASSIFIED REPORT

DESCRIPTORS: *OPTICAL DETECTION, *TELEVISION SYSTEMS, ELECTROOPTICS, LOW LIGHT LEVELS, COMPUTER APPLICATIONS, MINICOMPUTERS, COMPUTER PROGRAMS, TRANSFER FUNCTIONS, DIGITAL SYSTEMS (U)
IDENTIFIERS: HP 2116C MINICOMPUTERS (U)

A VIDEO SIGNAL MEASUREMENT SYSTEM WHICH PROVIDES MORE RELIABLE ESTIMATES OF THE PERFORMANCE PARAMETERS OF E-O SENSORS THAN HAS BEEN POSSIBLE USING PREVIOUS METHODS IS DESCRIBED. THIS SYSTEM, CONSISTING OF 100 MHZ SAMPLE-RATE TRANSIENT RECORDER INTERFACED TO A MINICOMPUTER, ACQUIRES DATA FROM A SENSOR UNDER TEST AT NEAR-REAL-TIME RATES AND THEN RAPIDLY ANALYZES THE DATA TO OBTAIN PERFORMANCE PARAMETER ESTIMATES. THE USE OF THE SYSTEM FOR THE MEASUREMENT OF SIGNAL-TO-NOISE RATIOS, SIGNAL TRANSFER FUNCTIONS, SPECTRAL TRANSFER FUNCTIONS, MODULATION TRANSFER FUNCTIONS, APERTURE RESPONSE, AND NOISE SPECTRAL DENSITY ARE DESCRIBED. THE MEASUREMENT OF THE ABOVE PARAMETERS UNDER STATIC AND DYNAMIC CONDITIONS WITH STATIONARY AND MOVING TARGETS IS DISCUSSED. RESULTS OF MEASUREMENTS PERFORMED ON A LOW LIGHT LEVEL TELEVISION SENSOR ARE GIVEN ALONG WITH A COMPARISON OF THE MEASUREMENTS OBTAINED ON THIS SENSOR USING STANDARD ANALOG METHODS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A018 147 8/2 9/2
ARMY ENGINEER TOPOGRAPHIC LABS FORT BELVOIR VA

COMPUTING A LINE-OF-SIGHT USING DIGITAL IMAGE MATCHING AND ANALYTICAL PHOTOGRAMMETRY. (U)

DESCRIPTIVE NOTE: RESEARCH NOTE,
MAR 75 24P ACKERMAN,DAVID L. ;CROMBIE, MICHAEL A. ;
REPT. NO. ETL-0027
PROJ: DA-4-A-762707-D-853

UNCLASSIFIED REPORT

DESCRIPTORS: *LINE OF SIGHT, *PHOTOGRAMMETRY, STEREOPHOTOGRAMMETRY, PROFILES, COMPUTER PROGRAMS, MEMORY DEVICES, GEOMETRY, MATHEMATICAL MODELS, DIGITAL SYSTEMS, TRIANGULATION, COMPUTER PROGRAM DOCUMENTATION (U)
IDENTIFIERS: COMPUTER SOFTWARE (U)

THIS REPORT PRESENTS A METHOD FOR COMPUTING A LINE-OF-SIGHT BY USING DIGITAL GRAY SHADE DATA, ANALYTICAL PHOTOGRAMMETRY, AND COMPUTER SOFTWARE. THE COMPUTER PROGRAM COMBINES A DIGITAL IMAGE MATCHING PROCESS WITH STERO-TRIANGULATION TO PRODUCE A PROFILE BETWEEN THE END POINTS OF THE LINE. A 1,192 METER LINE-OF-SIGHT PROFILE HAS BEEN COMPUTED. THE PROBABILITY OF COMPUTING AN ENTIRE LINE IN ONE PROGRAM EXECUTION IS LOW. THIS IS DUE TO MATCHING PROBLEMS IN AREAS OF SPARSE IMAGERY AND STEEP SLOPES. THIS EXPERIMENT CREATED MORE QUESTIONS THAN ANSWERS. THE QUESTIONS INVOLVED PATCH SIZE, PIXEL SIZE, PIXEL SPACING, COMPUTATION TIME, COMPUTER MEMORY, AND QUANTIZATION OF THE DIGITAL GRAY SHADE DATA. THE PROFILING TECHNIQUE COULD BE USED FOR ENGINEERING JOBS SUCH AS CUT AND FILL, PROFILING FOR DAM PLANNING, VOLUME DETERMINATION OF PILES OF EARTH FROM EXCAVATIONS, AND PROFILING CRATERS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A016 305 9/2 9/5
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF.

THE DATA GENERAL NOVA 800 MINICOMPUTER AS A DIGITAL CONTROLLER. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
SEP 75 155P POUNDS,JOHN WILLIAM , JR;

UNCLASSIFIED REPORT

DESCRIPTORS: *MINICOMPUTERS, ANALOG TO DIGITAL CONVERTERS, DIGITAL TO ANALOG CONVERTERS, PROGRAMMED INSTRUCTION, INTERFACES, DATA ACQUISITION, COMPUTER PROGRAMMING, INPUT OUTPUT PROCESSING, ARITHMETIC UNITS, COSTS, THESES, CORE STORAGE, MEMORY DEVICES, MULTIPLEXING, CONTROL SYSTEMS, DIGITAL SYSTEMS (U)
IDENTIFIERS: *DIGITAL CONTROLLERS, NOVA 800 COMPUTERS, PERIPHERAL EQUIPMENT (U)

THE DATA GENERAL NOVA 800 MINICOMPUTERS IS DESCRIBED IN DETAIL. AN ANALYSIS IS MADE OF ITS INSTRUCTION SET AND A DESCRIPTION IS GIVEN OF AVAILABLE PERIPHERAL EQUIPMENT. THE SPECIFICATION CRITERIA FOR A/D AND D/A DEVICES IS DISCUSSED AND THE SELECTION OF SPECIFIC DEVICES IS SUPPORTED. THE DT 1620 DATA ACQUISITION SYSTEM AND THE DT 217 D/A CONVERTER ARE DESCRIBED. THE INTERFACE CONSIDERATIONS FOR ADAPTING THE A/D AND D/A CONVERTERS TO THE NOVA SYSTEM ARE DISCUSSED. PROGRAMMING EXAMPLES FOR THE COMBINED SYSTEM ARE GIVEN. A SYSTEM OPERATION TUTORIAL IS OFFERED WHICH INCLUDES A PROGRAMMED INSTRUCTION SECTION TO EFFICIENTLY FAMILIARIZE THE PROSPECTIVE USER. FINALLY, EXAMPLES OF SYSTEM USE AS A DIGITAL CONTROLLER ARE PROVIDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A018 782 17/2 9/2 17/7 17/9
RAND CORP SANTA MONICA CALIF

A NEW TOOL FOR FAST DIGITAL CORRELATION. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,
SEP 75 31P LINDSEY,JOHN ;REED,IRVING S. ;
REPT. NO. R-1594-PR
CONTRACT: F44620-73-C-0011

UNCLASSIFIED REPORT

DESCRIPTORS: *SIGNAL PROCESSING, *DIGITAL SYSTEMS, *FOURIER TRANSFORMATION, *CORRELATION TECHNIQUES, *NUMERICAL ANALYSIS, ALGORITHMS, DIGITAL COMPUTERS, WAVEFORMS, REAL TIME, OPERATIONS RESEARCH (U)
IDENTIFIERS: FAST FOURIER TRANSFORMS, DIGITAL PROCESSORS (U)

MANY MODERN COMMUNICATION AND RADAR SYSTEMS IN THE USAF TRANSMIT AND RECEIVE SOPHISTICATED WAVEFORMS. TO DETECT THESE WAVEFORMS IN THE PRESENCE OF NOISE, THE RECEIVED WAVEFORM MUST BE CORRELATED WITH ALL THE TRANSMITTED WAVEFORMS THAT MAY HAVE BEEN SENT. THE LARGE NUMBER OF THESE WAVEFORMS AND THEIR LENGTH IN SYMBOLS OFTEN PRECLUDES THE USE OF ANALOGUE CORRELATION AND NECESSITATES THE USE OF DIGITAL CORRELATION. THIS STUDY OF TRANSFORMS OVER FINITE FIELDS OPENS THE POSSIBILITY OF DISCOVERING NEW FAST DIGITAL CORRELATION TECHNIQUES FOR COMMUNICATION AND RADAR PROBLEMS. IT IS FELT THAT SUCH TECHNIQUES WILL ENHANCE FAST FOURIER TRANSFORM METHODS USED PRESENTLY TO YIELD FAST DIGITAL CONVOLUTION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-A019 297 9/3 9/5 20/9 20/12
9/2

STANFORD UNIV CALIF STANFORD ELECTRONICS LABS

SEMI-ANNUAL STATUS REPORT NUMBER 128, 1 JANUARY THROUGH 30 JUNE 1975. (U)

JUN 75 76P

REPT. NO. SU-SEL-75-035

CONTRACT: N00014-75-C-0601

UNCLASSIFIED REPORT

DESCRIPTORS: *INFORMATION SYSTEMS, *DIGITAL SYSTEMS, *INTEGRATED SYSTEMS, *SOLID STATE ELECTRONICS, *PLASMAS(PHYSICS), *QUANTUM ELECTRONICS, COMPLEMENTARY METAL OXIDE SEMICONDUCTORS, TROPOSPHERE, ION IMPLANTATION, COMPUTER ARCHITECTURE, TRANSISTORS, GAMMA RAYS, PATTERN RECOGNITION, COMPUTERS, DATA COMPRESSION, INFORMATION THEORY (U)

CONTENTS: INFORMATION SYSTEMS; DIGITAL SYSTEMS; INTEGRATED CIRCUITS; SOLID STATE; RADIOSCIENCE; AND PLASMA PHYSICS AND QUANTUM ELECTRONICS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A019 305 9/2
PICATINNY ARSENAL DOVER N J

DIGITAL SIMULATORS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
OCT 75 57P CARBREY,BRUCE D. ;
REPT. NO. PA-TR-4876

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER PROGRAMS, *SIMULATION LANGUAGES, *COMPUTERIZED SIMULATION, SIMULATORS, DIGITAL SYSTEMS, INTERACTIVE GRAPHICS, COMPUTER APPLICATIONS, MISSIONS, HYBRID COMPUTERS, ANALOG SYSTEMS, SUBROUTINES, FORTRAN, MODELS, USER NEEDS (U)
IDENTIFIERS: SCEPTRE COMPUTER PROGRAM (U)

THIS REPORT IS BASED UPON MATERIAL PRESENTED TO PICATINNY ARSENAL BY BRUCE D. CARBREY IN A SEMINAR ON DIGITAL SIMULATION LANGUAGES AVAILABLE AT THE ARSENAL. CONTAINED IN THIS REPORT ARE PRINTS OF THE ORIGINAL SLIDES PRESENTED IN THE SEMINAR, TOGETHER WITH SOME EXPLANATORY TEXT, INTENDED AS AN ADJUNCT TO THE ORIGINAL TALK. THE MATERIAL PRESENTS AN OVERVIEW OF FIVE SPECIFIC SIMULATORS. FOR SPECIFIC DETAILS, USERS SHOULD REFER TO THE PARTICULAR USERS' MANUAL OR RELATED DOCUMENTS FOR THE SIMULATION PROGRAM OF INTEREST. AS PART OF MISD'S COMMITMENT TO KEEPING THE SCIENTIFIC AND ENGINEERING COMMUNITY APPRISED OF MISSION-ORIENTED COMPUTER PROGRAM DEVELOPMENTS, THE SCEPTRE, SUPER-SCEPTRE, MIMIC, MITAS AND CSSL COMPUTER PROGRAMS ARE BRIEFLY SUMMARIZED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A019 810 9/2
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF ENGINEERING

PERFORMANCE EVALUATION OF THE CCD450 DIGITAL MEMORY. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
DEC 75 83P BEAUMONT,JAMES ;
REPT. NO. GE/EE/75-13

UNCLASSIFIED REPORT

DESCRIPTORS: *MEMORY DEVICES, CHARGE COUPLED DEVICES, DIGITAL SYSTEMS, PERFORMANCE TESTS, SHIFT REGISTERS, TEST EQUIPMENT, THESES (U)
IDENTIFIERS: SEMICONDUCTOR COMPUTER STORAGE (U)

THE FAIRCHILD CCD450 9216-BIT CCD DIGITAL MEMORY WAS DYNAMICALLY TESTED USING THE MACRODATA MD-100 MEMORY EXERCISER. THE MD-100 MEMORY EXERCISER IS A HIGH-SPEED AUTOMATIC UNIT DESIGNED TO TEST SEMICONDUCTOR MEMORIES. AN INTERFACE CIRCUIT WAS DESIGNED AND BUILT TO ENABLE THE CCD450 TO BE TESTED ON THE MD-100. THIS INTERFACE CIRCUIT CONSISTS OF FIVE MAIN SECTIONS: A TWO-PHASE CLOCK GENERATOR, A CLOCK DRIVER UNIT, A BUFFER-COMPARATOR SECTION, A DATA STROBE PULSE GENERATOR, AND POWER SUPPLY SEQUENCING CIRCUITS. THE POWER DISSIPATION, TEMPERATURE RANGE, AND DATA RATE LIMITATIONS WERE EXPERIMENTALLY DETERMINED AND COMPARED WITH THE MANUFACTURER'S SPECIFICATIONS. OPERATING MARGINS WERE ALSO OBTAINED FOR FOUR DIFFERENT CCD450 DEVICES. THE RESULTING SHMOO PLOTS WERE THEN COMPARED WITH THE SPECIFIED OPERATING RANGES OF THE DEVICES TO DETERMINE IF THE DEVICES WERE PERFORMING WITHIN THE DESIRED LIMITS. A FEW DIFFERENCES WERE NOTED BUT MOST OF THE DATA COMPARED FAVORABLY WITH THE MANUFACTURER'S SPECIFICATIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A019 853 16/4.1
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF ENGINEERING

DESIGN AND ANALYSIS OF AIR-TO-AIR MISSILE USING DIGITAL CONTROL THESIS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
DEC 75 110P CALLEN,THOMAS R. ;
REPT. NO. GE/EE/75-17

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR TO AIR MISSILES, *FLIGHT CONTROL SYSTEMS, DIGITAL SYSTEMS, AERODYNAMIC STABILITY, EQUATIONS OF MOTION, TRANSFER FUNCTIONS, MATHEMATICAL MODELS, COMPUTER AIDED DESIGN, THESES, COMPUTERIZED SIMULATION (U)

THE DESIGN OF AUTOMATIC CONTROL SYSTEMS IS ONE OF THE MOST CRITICAL AND IMPORTANT TASKS THAT THE AIR-TO-AIR MISSILE CONTROL ENGINEER MUST ACCOMPLISH. THE ADVANTAGES OF LOW COST, HIGH RELIABILITY AND LOW POWER REQUIREMENTS, ALONG WITH THE SMALL SPACE REQUIREMENTS, MAKE DIGITAL CONTROLLERS A VERY ATTRACTIVE DEVICE FOR THIS PURPOSE. THIS THESIS PRESENTS THE ENGINEERING TECHNIQUES THAT CAN BE EMPLOYED TO DEVELOP A MATHEMATICAL MODEL OF A GENERIC MISSILE AND ALSO TO DESIGN A DIGITAL CONTROLLER FOR THE SYSTEM. THE BASIC MISSILE'S STABILITY AND PERFORMANCE IS EVALUATED IN BOTH THE CONTINUOUS AND DISCRETE DOMAINS, FOR ANGLES OF ATTACK OF 0 AND 30 DEGREES. THE EFFECTS OF SAMPLING TIME ARE DEMONSTRATED, AND DIRECT DIGITAL DESIGN TECHNIQUES ARE PRESENTED, WITH THE RESULTING DIGITAL CONTROLLERS BEING EVALUATED AS TO THEIR EFFECT ON SYSTEM PERFORMANCE. PITCH RATE CONTROL IS INVESTIGATED IN ADDITION TO PITCH ATTITUDE CONTROL. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-A019 856 1/4 1/3
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF ENGINEERING

VOTER/MONITOR DEVELOPMENT FOR A DIGITAL FLIGHT CONTROL SYSTEM. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
DEC 75 126P AHERN,DANIEL R. ;
REPT. NO. GE/EE/75D-10

UNCLASSIFIED REPORT

DESCRIPTORS: *FLIGHT CONTROL SYSTEMS, *FLY BY WIRE CONTROL, DIGITAL SYSTEMS, PROCESSING EQUIPMENT, MONITORS, SELECTION, ALGORITHMS, MICROCOMPUTERS, FORTRAN, THESES, COMPUTER PROGRAMS, COMPUTERIZED SIMULATION (U)
IDENTIFIERS: VOTERS(AVIONICS) (U)

IN THE FUTURE DIGITAL PROCESSORS WILL BE USED TO COMPUTE CONTROL SURFACE DEFLECTIONS BASED UPON PILOT INPUTS, CURRENT SURFACE POSITION AND OTHER VARIABLES. THE PURPOSE OF THIS INVESTIGATION WAS TO GENERATE AN ALGORITHM TO CHOOSE THE BEST OUTPUT SIGNAL FROM AMONG FOUR ASYNCHRONOUS INPUTS. THE PROBLEM WAS DIVIDED INTO TWO TASKS: COMPARISON MONITORING AND SIGNAL SELECTION. THE USE OF AN IMP-16C MICROPROCESSOR TO IMPLEMENT THE ALGORITHM IS DISCUSSED AND THE DESIGN OF AN INTERFACE WHICH WILL ALLOW COMMUNICATIONS BETWEEN THE FLIGHT CONTROL PROCESSORS AND THE DIGITAL VOTER/MONITOR IS PRESENTED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A019 967 17/2
MITRE CORP BEDFORD MASS

MIDS (MULTIMODE INFORMATION DISTRIBUTION SYSTEM) NETWORK CONTROL AND DIGITAL DATA SUBSYSTEM DESIGNS, (U)

DEC 75 99P CLARK,H. R. ;
REPT. NO. MTR-3041
CONTRACT: F19628-76-C-0001
PROJ: AF-7040
MONITOR: ESD TR-75-303

UNCLASSIFIED REPORT

DESCRIPTORS: *COMMUNICATIONS NETWORKS, MULTIMODE, TELECOMMUNICATION, CONTROL, DIGITAL SYSTEMS, DATA TRANSMISSION SYSTEMS, INTERACTIONS, MICROCOMPUTERS (U)
IDENTIFIERS: MIDS(MULTIMODE INFORMATION DISTRIBUTION SYSTEMS), MULTIMODE INFORMATION DISTRIBUTION SYSTEMS (U)

THE MULTIMODE INFORMATION DISTRIBUTION SYSTEM (MIDS) IS A LOCAL AREA TELECOMMUNICATIONS SYSTEM CAPABLE OF SIMULTANEOUSLY HANDLING DIGITAL DATA, VIDEO AND VOICE TRAFFIC FOR A MULTITUDE OF SUBSCRIBERS IN A VARIETY OF CONNECTIVITY PATTERNS ON WIDEBAND MEDIA SUCH AS COAXIAL CABLE. THE DESIGNS FOR A MIDS DATA DISTRIBUTION SUBSYSTEM AND A MULTIMODE NETWORK CONTROL SUBSYSTEM BASED ON TIME DIVISION MULTIPLEXED TECHNIQUES ARE DESCRIBED. THE USE OF A NOVEL, ADAPTIVE DATA RATE FEATURE PROVIDES HIGH-SPEED SERVICE TO ANY TERMINAL AS REQUIRED WITHOUT DEDICATING EXCESSIVE AMOUNTS OF CAPACITY TO PARTICULAR TERMINALS. THESE DESIGNS ARE ORIENTED TOWARD MAXIMUM USE OF CURRENT MICROPROCESSOR TECHNOLOGY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A021 510 9/2
BENDIX CORP TETERBORO N J FLIGHT SYSTEMS DIV

DESIGN OF DIGITAL AIR DATA COMPUTERS. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 70-SEP 75,
SEP 75 250P ASCOLESE,JOSEPH L. ;
SMIALOWICZ,CASIMIR S. ;ATLAS,ROBERT ;
CONTRACT: F33657-70-C-1126
PROJ: AF-2713
TASK: 271306
MONITOR: ASD TR-75-30

UNCLASSIFIED REPORT

DESCRIPTORS: •DIGITAL COMPUTERS, •COMPUTER ARCHITECTURE, COMPUTER PROGRAMMING, DIGITAL SYSTEMS, HIGH RATE, SOLID STATE ELECTRONICS, CENTRAL PROCESSING UNITS, COMPUTER LOGIC, MEMORY DEVICES, INPUT OUTPUT DEVICES, ASSEMBLY LANGUAGES, AIRBORNE (U)
IDENTIFIERS: SAMPLE AND HOLD CIRCUITS, SUBSYSTEMS, DESIGN (U)

THIS REPORT PRESENTS THE DESIGN APPROACH FOR SUBSYSTEMS IMPLEMENTED IN SOLID-STATE DIGITAL AIR DATA COMPUTERS TO FIT HIGH ACCURACY AND HIGH SPEED NEEDS OF HIGH PERFORMANCE AIRCRAFT. IN ADDITION, THE DESIGN DATA PROVIDES DIRECTION FOR DESIGN SPECIFICATION OF FUTURE SOLID-STATE DIGITAL AIR DATA COMPUTERS. A TRADE OFF OF VARIOUS TECHNIQUES SUCH AS SOLID STATE ANALOG, HYBRID AND DIGITAL MECHANIZATION UTILIZING CURRENT AND LATEST STATE OF THE ART APPROACHES ARE DISCUSSED. THE CHARACTERISTICS OF THE NECESSARY DESIGN PARAMETERS TO ACHIEVE TOTAL SYSTEM ACCURACY AND RESPONSE REQUIREMENTS HAS AN ENORMOUS VARIETY OF MEANINGS THEREFORE A PROPOSED SPECIFICATION CHECKLIST IS PRESENTED TO MINIMIZE THE COMPLEXITY OF EQUIPMENT AND TO INSURE THAT ALL PERTINENT AREAS ARE REALISTICALLY SPECIFIED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A021 777 1779 9/2
MITRE CORP BEDFORD MASS

THE MULTI-MINICOMPUTER PROCESSOR. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
FEB 76 5RP COFFIN,D. D. ;CONNELL,M.
E. T. ;
REPT. NO. MTR-3072
CONTRACT: F19628-76-C-0001
PROJ: AF-6290
MONITOR: ESD TR-75-351

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPT. NO. ESD-TR-75-352, AD-A021 778.

DESCRIPTORS: *MOVING TARGET INDICATORS, *MINICOMPUTERS, *MULTIPROCESSORS, ELECTROOPTICS, REAL TIME, DEEP SPACE, SPACE SURVEILLANCE SYSTEMS, DIGITAL SYSTEMS, DATA PROCESSING, BUS CONDUCTORS, MAGNETIC DISKS, NETWORKS, GROUND STATIONS (U)
IDENTIFIERS: COMPUTER NETWORKS, DISTRIBUTED PROCESSING, COMPUTER SOFTWARE, DGC 800 SERIES COMPUTERS (U)

THE DIGITAL SNAPSHOT MOVING TARGET INDICATION (MTI) TECHNIQUE WAS DEVELOPED FOR THE GEODSS PROJECT IN FY-75. GEODSS IS A GROUND-BASED ELECTRO-OPTICAL DEEP SPACE SURVEILLANCE SYSTEM. THIS DOCUMENT DESCRIBES THE COMPUTER HARDWARE USED AS A VEHICLE ON WHICH SUITABLE REAL-TIME MTI IMPLEMENTATION COULD BE TESTED. THE COMPUTER HARDWARE CONSISTS OF TEN INTERCONNECTED DATA GENERAL CORPORATION 800 SERIES COMPUTERS AND THEIR ASSOCIATED PERIPHERALS. THIS MULTI-MINICOMPUTER PROCESSOR (MMCP) CONSTITUTES SUFFICIENT COMPUTING POWER TO ACHIEVE AN OPERATIONAL REAL-TIME MTI PROCESSOR. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A022 255 9/2 1/4
ARMY MISSILE RESEARCH DEVELOPMENT AND ENGINEERING LAB
REDSTONE ARSENAL ALA GUIDANCE AND CONTROL DIRECTORATE

COMPUTER SIMULATION OF CONTROL SYSTEM
CONTAINING DIGITAL HARDWARE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
DEC 75 20P SELTZER,S. M. ;
REPT. NO. RG-76-33
PROJ: DA-1-M-B623038214

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTERIZED SIMULATION, *DIGITAL
SYSTEMS, *AUTOMATIC PILOTS, DATA PROCESSING,
MODELS, LOOPS, GUIDANCE, CONTROL SYSTEMS,
TRANSFER FUNCTIONS, SAMPLING (U)
IDENTIFIERS: SUBSYSTEMS, Z TRANSFORMS (U)

THIS REPORT DESCRIBES AN APPROACH THAT MAY BE USED
TO DEVELOP A SIMULATION WHICH EMPLOYS SOME DIGITAL
HARDWARE IN THE GUIDANCE AND CONTROL LOOP. THE
APPROACH IS APPLIED TO PORTIONS OF THE T-6 DIGITAL
AUTOPILOT DATA PROCESSOR. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-A022 317 22/2 9/2 4/2
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

A DIGITAL DATA ACQUISITION INTERFACE FOR THE SMS DIRECT READOUT GROUND STATION - CONCEPT AND PRELIMINARY DESIGN. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
OCT 75 19P ALEXANDER,GEORGE D. ;
REPT. NO. ECOM-5577
PROJ: DA-1-T-161101-A-91-A

UNCLASSIFIED REPORT

DESCRIPTORS: *METEOROLOGICAL SATELLITES, *GROUND STATIONS, *DATA ACQUISITION, IMAGES, DIGITAL SYSTEMS, INTERFACES, DATA PROCESSING, DATA STORAGE SYSTEMS, INFORMATION RETRIEVAL, COMPUTER PROGRAM DOCUMENTATION, PREPROCESSING, SYNCHRONOUS SATELLITES, READ OUT TECHNIQUES, MINICOMPUTERS (U)
IDENTIFIERS: COMPUTER SOFTWARE, DESIGN, DIGITAL PROCESSING (U)

GENERAL SPECIFICATIONS ARE GENERATED FOR HARDWARE AND SOFTWARE THAT WILL PERMIT RETRIEVAL, PREPROCESSING, AND STORAGE OF DIGITAL METEOROLOGICAL SATELLITE IMAGERY DATA THAT ARE PRESENTLY AVAILABLE TO RESEARCHERS ONLY IN ANALOGUE (TRANSPARENCY) FORMAT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A022 666 9/2 20/1 20/6
PENNSYLVANIA STATE UNIV UNIVERSITY PARK APPLIED RESEARCH LAB

DIGITAL RECONSTRUCTION OF ACOUSTIC HOLOGRAMS. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
JAN 76 141P COHEN,R. L. ;
REPT. NO. TM-76-05
CONTRACT: N00017-73-C-1416

UNCLASSIFIED REPORT

DESCRIPTORS: *ACOUSTICS, *HOLOGRAMS, *HOLOGRAPHY, *COMPUTER GRAPHICS, IMAGE PROCESSING, DIGITAL SYSTEMS, REPRODUCTION, COMPUTER PROGRAMS (U)
IDENTIFIERS: GABOR HOLOGRAPHY (U)

THE SUBJECT OF THIS STUDY IS THE DEVELOPMENT OF A COMPUTER PROGRAM CAPABLE OF RECONSTRUCTING IMAGES FROM ACOUSTIC HOLOGRAMS. THE THEORY ON WHICH THE PROGRAM IS BASED IS THAT OF GABOR TYPE (ON-AXIS) HOLOGRAPHY. A HOLOGRAM IS AN INTENSITY RECORDING OF THE INTERFERENCE OF AN OBJECT WAVE AND A REFERENCE WAVE. A RECONSTRUCTION FROM THE HOLOGRAM CONTAINS FOUR COMPONENTS, NAMELY THE REFERENCE WAVE SQUARED, THE OBJECT WAVE SQUARED, THE CONJUGATE IMAGE AND THE TRUE IMAGE. DIGITAL TECHNIQUES FOR ISOLATING THE FOUR COMPONENTS ARE PRESENTED ALONG WITH EXAMPLES OF RECONSTRUCTIONS. RECONSTRUCTIONS FROM DIGITALLY GENERATED HOLOGRAMS OF POINT SOURCES ARE DISCUSSED. IT WAS FOUND THAT INTERFERENCE BETWEEN IMAGES OF POINT SOURCES CAN DRASTICALLY AFFECT IMAGE INTENSITY. IMAGE INTENSITY IS ALSO DEPENDENT ON SOURCE POSITION RELATIVE TO THE HOLOGRAM APERTURE. A SOURCE LOCATED NEAR THE EDGE OF THE APERTURE RECONSTRUCTS WITH ONLY HALF THE INTENSITY OF THE SAME SOURCE LOCATED AT THE APERTURE CENTER. METHODS OF HOLOGRAM GENERATION ARE COMPARED FOR IMAGE QUALITY. PHASE-ONLY AND BINARY TECHNIQUES ADD SPURIOUS HIGH FREQUENCY INFORMATION TO THE IMAGES, BUT IN THE APPLICATION OF SOURCE LOCATION THIS IS NOT A SERIOUS HANDICAP. DIGITIZATION RANGE (-1, 1) WAS FOUND SUPERIOR TO (0, 1) IN THAT IT ELIMINATES TWO OF THE UNWANTED IMAGE NOISE TERMS IN THE PHASE-ONLY AND BINARY CASES. HOLOGRAMS CONTAINING ONLY THE CONJUGATE IMAGE COMPONENT GIVE VASTLY IMPROVED SIGNAL TO NOISE RATIOS COMPARED WITH THE OTHER TYPES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-A023 305 17/9 9/2
AIR FORCE GEOPHYSICS LAB HANSCOM AFB MASS

OBJECTIVE FORECASTING FROM DIGITAL RADAR PRESENTATIONS, (U)

75 4P MUENCH,H. STUART ;
REPT. NO. AFGL-TR-76-0071
PROJ: AF-8628
TASK: 862811

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN CONFERENCE ON WEATHER FORECASTING AND ANALYSIS (6TH), 10-14 MAY 76, ALBANY, N. Y., PREPRINT VOLUME P89-91 1976.

DESCRIPTORS: *METEOROLOGICAL RADAR, *DATA PROCESSING, WEATHER FORECASTING, DIGITAL SYSTEMS, METEOROLOGICAL PHENOMENA, VISIBILITY, DIGITIZERS, REPRINTS (U)
IDENTIFIERS: AN/FPS-77 (U)

DEVELOPMENTS IN ELECTRONIC DATA PROCESSING NOW ALLOW COMPUTERS TO BE TIED DIRECTLY TO WEATHER RADARS AND THE RESULTING DIGITAL DATA ARE AMENABLE TO DEVELOPING OBJECTIVE FORECASTS. THE POTENTIAL EXISTS TO MAKE SHORT RANGE (0 TO 3 HR) FORECASTS OF RAINFALL, SNOWFALL, VISIBILITY, HAIL AND THUNDERSTORM GUSTS THROUGH MODELS BASED ON EXTRAPOLATION OF RADAR ECHO MOTION AND RELATIONSHIPS OF THESE WEATHER PARAMETERS TO RADAR OUTPUT. A PROJECT WAS SET UP AT AFCRL TO EXPLORE THOSE POTENTIALS. A DESCRIPTION OF THE PROJECT AND RESULTS OF THE FIRST TWO YEARS ARE PRESENTED. ALTHOUGH VARIATIONS IN PARTICLE-SIZE DISTRIBUTION WEAKEN THE RADAR-WEATHER RELATIONSHIPS AND SEVERE STORMS ARE INFREQUENT, THE OUTLOOK IS VERY GOOD FOR USEFUL COMPUTER SHORT-RANGE FORECASTS OF SUDDEN WEATHER CHANGES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A024 740 9/2
DARCOM INTERN TRAINING CENTER TEXARKANA TEX

A COMPARISON OF 1130 CSMP AND THE EAI 680 HYBRID COMPUTER FOR VARIOUS ENGINEERING PROBLEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 76 82P ROSSNAGEL,BARTON L. ;
REPT. NO. DARCOM-ITC-02-08-76-014

UNCLASSIFIED REPORT

DESCRIPTORS: *HYBRID COMPUTERS, *ANALOG DIGITAL COMPUTERS, ANALOG SYSTEMS, DIGITAL SYSTEMS, COMPUTERIZED SIMULATION, ANALOG COMPUTER ANALYSIS, COMPARISON, INTEGRATION, DIFFERENTIAL EQUATIONS, POLYNOMIALS, SOLUTIONS(GENERAL), ACCURACY (U)
IDENTIFIERS: EAI 680 COMPUTERS, CSMP 1130 COMPUTERS (U)

THIS REPORT COMPARES THE SOLUTIONS FOUND FROM USING THE 1130 CONTINUOUS SYSTEMS MODELING PROGRAM AND THE EAI 680 HYBRID COMPUTER FOR FIVE PROBLEMS. THE PROBLEMS USED WERE INTEGRATION, POLYNOMIAL GENERATION, DIFFERENTIAL EQUATIONS AND FUNCTION GENERATION. COMPARISONS WERE MADE ON THE BASIS OF TOTAL TIME, EASE OF APPLICATION, AND SOLUTION ACCURACY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A025 419 9/2 17/6 17/5
SOUTHERN RESEARCH INST BIRMINGHAM ALA

INSTRUCTION AND OPERATION MANUAL FOR THE DIGITAL TRACKER. (U)

MAY 76 108P
REPT. NO. SORI-EAS-76-223, SORI-3493-1
CONTRACT: DAAH01-75-C-0790

UNCLASSIFIED REPORT

DESCRIPTORS: *TRACKING, *DIGITAL COMPUTERS, TARGETS, DIGITAL SYSTEMS, ADAPTIVE SYSTEMS, TELEVISION TRACKING, MINICOMPUTERS, VIDEO SIGNALS, PROCESSING, COMPUTER PROGRAMS, ALGORITHMS, INSTRUCTION MANUALS (U)
IDENTIFIERS: DIGITAL TRACKERS (U)

THE DIGITAL TRACKER IS A VERSION OF THE ADAPTIVE GATE TV TRACKER. IT PRODUCES AZIMUTH AND ELEVATION ERROR SIGNALS FROM RASTER SCAN SIGNALS SUCH AS THOSE PRODUCED BY TV CAMERAS AND IMAGING IR SEEKERS. THE DIGITAL TRACKER USES A MINICOMPUTER FOR POSITION CALCULATION AND AUXILIARY CIRCUITS FOR VIDEO PROCESSING AND COMPUTER INTERFACE FUNCTIONS. THE MINICOMPUTER PROGRAM CAN BE EASILY MODIFIED TO TEST DIFFERENT TRACKING ALGORITHMS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A027 292 12/1 9/2
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

THEORY AND TESTING OF UNIFORM RANDOM NUMBER GENERATORS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
JUN 76 60P LEARMONTH,GERARD PAUL ;

UNCLASSIFIED REPORT

DESCRIPTORS: *RANDOM NUMBER GENERATORS, *DIGITAL SYSTEMS, *SEQUENCES(MATHEMATICS), *ALGORITHMS, STATISTICAL TESTS, DIGITAL COMPUTERS, SHIFT REGISTERS, ALGEBRA, GROUPS(MATHEMATICS) (U)
IDENTIFIERS: LATTICE TESTS, SPECTRAL TEST, LINEAR CONGRUENTIAL SEQUENCES, FINITE FIELD ARITHMETIC (U)

TWO STRUCTURAL TESTS FOR RANDOM NUMBER GENERATORS OF THE LEHMER CONGRUENTIAL TYPE ARE DISCUSSED. THEY ARE KNOWN NOW TO BE ESSENTIALLY EQUIVALENT BUT ARE FORMULATED INCORRECTLY AND THE COMPUTATIONAL ALGORITHMS TO IMPLEMENT THE TESTS ARE UNNECESSARILY COMPLICATED. NEW ALGORITHMS FOR THESE TESTS WILL BE SKETCHED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOMO7

AD-A027 433 1/7
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF ENGINEERING

A DIGITAL CONTROLLER FOR HORIZONTAL ANGULAR MOTION OF THE FJSRL SEISMIC ISOLATION PLATFORM. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
JUN 76 122P BURKHART,MARTIN J. ;
REPT. NO. GE/EE/76-6

UNCLASSIFIED REPORT

DESCRIPTORS: *STABILIZED PLATFORMS, *CONTROL SYSTEMS, *DIGITAL SYSTEMS, *INERTIAL NAVIGATION, *STOCHASTIC PROCESSES, DIGITAL COMPUTERS, PNEUMATIC DEVICES, HORIZONTAL STABILIZERS, KALMAN FILTERING, NAVIGATION COMPUTERS, NAVIGATIONAL AIDS (U)
IDENTIFIERS: *SEISMIC ISOLATION PLATFORM, HORIZONTAL ANGULAR MOTION, STOCHASTIC CONTROLLER, INERTIAL INSTRUMENT TESTING, DESIGN, DIGITAL CONTROL SYSTEMS (U)

THIS STUDY IS PART OF A CONTINUING EFFORT TO DEVELOP A STOCHASTIC CONTROLLER FOR THE ANGULAR MOTION ABOUT A HORIZONTAL AXIS OF THE SEISMIC ISOLATION PLATFORM AT THE FRANK J. SEILER RESEARCH LABORATORY. THE DESIGN OF A DIGITAL CONTROLLER IS INVESTIGATED BASED ON THE ASSUMPTION THAT A KALMAN FILTER WOULD PROVIDE SUFFICIENTLY ACCURATE ESTIMATIONS OF THE STATES OF THE SYSTEM. THE DESIGN SPECIFICATIONS ARE TO MAINTAIN ANGULAR POSITION WITHIN + OR - 0.001 ARCSECONDS AND ANGULAR VELOCITY WITHIN + OR - 1.4 X 0.00001 ARCSECONDS PER SECOND FOR A STEP FUNCTION OF 1.25 FT-LBS APPLIED TO THE PLATFORM. DISCRETE MODELS FOR THE PLATFORM AND TWO ACTUATORS ARE DEVELOPED. THE DISCRETE MODELS ARE USED TO DESIGN A CONTROLLER FOR EACH ACTUATOR. A CONTROLLER FOR THE PNEUMATIC ACTUATOR IS DESIGNED TO FORCE THE PLATFORM TO A ZERO STEADY-STATE POSITION. AN OPTIMAL CONTROLLER, WHICH REGULATES THE CLOSED PNEUMATIC LOOP, IS DESIGNED FOR THE SHAKER ACTUATOR. A THEORETICAL EVALUATION OF THE CONTROL SYSTEM SHOWS ANGULAR POSITION IS MAINTAINED WITHIN + OR - 2.81 X 0.001 ARCSECONDS AND ANGULAR VELOCITY HAS A PEAK OVERSHOOT OF 2.24 X 0.01 ARCSECONDS PER SECOND BUT SETTLES TO WITHIN THE DESIGN SPECIFICATION IN 0.08 SECONDS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-A027 934 1/3 9/2
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF ENGINEERING

REALIZATION OF A VOTER/MONITOR FOR A DIGITAL FLIGHT CONTROL SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUL 76 194P BUSH,JESSE F. ;
REPT. NO. GE/EE/76J-7

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: MASTER'S THESIS.

DESCRIPTORS: *FLIGHT CONTROL SYSTEMS, *DIGITAL SYSTEMS, *INFORMATION PROCESSING, *MICROCOMPUTERS, *MONITORS, DATA PROCESSING, COMPUTER PROGRAMS, DATA TRANSMISSION SYSTEMS, THESES, SIGNAL PROCESSING, FLIGHT SIMULATION (U)
IDENTIFIERS: SOFTWARE VOTER/MONITOR, IMP 16L MICROCOMPUTERS, INPUT INPUT COMPARISON MONITORING, INPUT DEVICES (U)

A SOFTWARE VOTER/MONITOR (V/M) SYSTEM IS DESIGNED AND IMPLEMENTED. THE V/M IS AN INFORMATIONAL PROCESSING DEVICE WHICH IS TO BE USED IN A DIGITAL FLIGHT CONTROL SYSTEM (DFCS). A DFCS IS CURRENTLY BEING DEVELOPED TO REPLACE EXISTING ANALOGUE FLIGHT CONTROL SYSTEMS IN SELECTIVE MILITARY AIRCRAFTS. THE V/M RECEIVES DATA OVER FOUR SEPARATE INPUT CHANNELS, AND IT PERFORMS A PROCESSING ROUTINE WHICH (A) ALLOWS IT TO CONTINUALLY SELECT ONE OF THE INPUT CHANNEL DATA FOR ROUTING OVER ITS SINGLE OUTPUT CHANNEL; AND (B) ALLOWS IT TO MAINTAIN A HISTORY OF EACH INPUT CHANNEL DATA FOR ROUTING OVER ITS SINGLE OUTPUT CHANNEL; AND (B) ALLOWS IT TO MAINTAIN A HISTORY OF EACH INPUT CHANNEL PERFORMANCE AND DECLARE AS DEFECTIVE ANY INPUT CHANNEL FROM WHICH IT CONSISTENTLY RECEIVES 'BAD' DATA. THE V/M IS IMPLEMENTED USING THE NATIONAL SEMICONDUCTOR IMP-16L MICROCOMPUTER. THE V/M PROCESSING SCHEME USES INPUT-INPUT COMPARISON MONITORING. SOFTWARE CODING AND HARDWARE CIRCUITRY ARE DESIGNED. ADDITIONALLY, A SOFTWARE TEST PROGRAM IS CONSTRUCTED. THE V/M SYSTEM TESTING IS LIMITED. THE CORRECT PERFORMANCE OF THE V/M SYSTEM IS ILLUSTRATED UNDER A STATIC TESTING ENVIRONMENT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A028 245 17/2 9/2
COMPUTER SCIENCES CORP FALLS CHURCH VA

DIGITAL CONTROLLER COMMUNICATION LINK. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 15 MAY 74-15 APR 75,
MAY 76 SRP PAVEY,CHARLES F. ;STAHLER, JAMES W. ;
REPT. NO. CSC-3314-00000
CONTRACT: F33615-74-C-1186
PROJ: AF-1227
TASK: 122712
MONITOR: AFAL TR-76-31

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER COMMUNICATIONS, *COMMUNICATION TERMINALS, *INTEREQUIPMENT COMMUNICATION, *DATA LINKS, *DATA TRANSMISSION SYSTEMS, COMPUTER PROGRAMS, FLOW CHARTING, ASYNCHRONOUS COMPUTERS, SUBROUTINES, ERROR ANALYSIS, SIMULATORS, K BAND, AVIONICS, ANTENNAS, FORTRAN, DIGITAL SYSTEMS, PULSE COMMUNICATIONS (U)
IDENTIFIERS: DATA TRANSFER (U)

THIS REPORT DESCRIBES THE ADDITION OF A COMMUNICATION LINK BETWEEN THE DIGITAL CONTROLLER (PDP 11/20) IN THE K-BAND TERMINAL SIMULATOR AND DIGITAL CONTROLLER (PDP 11/45) USED TO CONTROL THE POINTING OF THE ROOF TOP ANTENNA. BOTH DIGITAL CONTROLLERS ARE INTERGRAL PARTS OF THE AFAL COMMUNICATIONS SYSTEM EVALUATION LABORATORY (CSEL). THE NEED FOR COMPUTER TO COMPUTER COMMUNICATIONS IN SUPPORT OF THE AIR FORCE AVIONICS LABORATORY PROGRAMS ARISES FROM THE REQUIREMENT THAT DATA SUCH AS PROBABILITY OF ERROR, BE MOVED FROM THE K-BAND TERMINAL SIMULATOR'S SPECTRUM AND INTERFERENCE GENERATOR (SIG) DIGITAL PROCESSOR (PDP 11/20) TO ANOTHER COMPUTER (PDP 11/45) FOR PROCESSING AND THAT PATTERNS USED IN SIMULATING REAL-TIME EFFECTS ON COMMUNICATIONS CHANNELS (FADE ATTENUATION, FOR EXAMPLE) BE MOVED TO THE SIG DIGITAL PROCESSOR FOR USE IN REAL-TIME SIMULATION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A029 994 15/7 5/9 9/2
NAVAL WAR COLL NEWPORT R I

DETAILED STATEMENT OF REQUIREMENTS FOR A WAR GAMING SUPPORT SYSTEM. (U)

APR 75 66P

UNCLASSIFIED REPORT

DESCRIPTORS: *WAR GAMES, *NAVAL OPERATIONS, *COMPUTERIZED SIMULATION, *TRAINING DEVICES, *COMPUTER AIDED INSTRUCTION, TACTICAL WEAPONS, DIGITAL COMPUTERS, SIMULATORS, DIGITAL SIMULATION, DIGITAL SYSTEMS (U)
IDENTIFIERS: NAVY ELECTRONIC WARFARE SIMULATOR, WAR ANALYSIS AND RESEARCH SYSTEM, NAVAL WARFARE GAMING SYSTEM (U)

THIS DOCUMENT OUTLINES THE BASIC REQUIREMENTS FOR A DIGITAL-ASSISTED NAVAL TRAINING DEVICE LOCATED AT THE NAVAL WAR COLLEGE AND REFERRED TO AS NWGS. THIS SYSTEM WILL PROVIDE INTERACTIVE HUMAN-PARTICIPATION WAR GAMING AND RESEARCH SUPPORT FOR THE CONSTITUENT COLLEGES AND CENTER FOR ADVANCED RESEARCH OF THE NAVAL WAR COLLEGE, AND ENABLE FLEET COMMANDS AND OTHER NAVAL ACTIVITIES TO EXPLORE AND ANALYZE FUTURE STRATEGIC AND TACTICAL CONCEPTS, REHEARSE AT-SEA EXERCISES, AND EXAMINE OPERATIONAL PLANS. THE TWO BROAD AREAS OF COLLEGE AND FLEET GAMING ARE DESCRIBED AND DISCUSSED UNDER THE CATEGORIES OF WEAPON SYSTEM LEVEL, ONE-ON-ONE, FULL-SCALE, AND COMMAND GAMES. NWGS WILL REPLACE BOTH THE COLLEGE'S ANALOG GAMING FACILITY (THE NAVY ELECTRONIC WARFARE SIMULATOR (NEWS) AND THE PROTOTYPE DIGITAL WARFARE ANALYSIS AND RESEARCH SYSTEM (WARS). (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-A031 070 17/7
TRANSPORTATION SYSTEMS CENTER CAMBRIDGE MASS

CONTROLLER/COMPUTER INTERFACE WITH AN AIR-GROUND DATA LINK. (U)

DESCRIPTIVE NOTE: FINAL REPT. JAN-MAY 75,
JUN 76 150P HAGOPIAN,J. ;MORGAN,T. ;
REPT. NO. TSC-FAA-75-23
MONITOR: FAA RD-76-91

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR TRAFFIC CONTROL SYSTEM ANALYSIS, AIR TRAFFIC CONTROLLERS, DATA LINKS, DIGITAL COMPUTERS, VOICE COMMUNICATIONS, DIGITAL SYSTEMS, MESSAGE PROCESSING, INTERFACES (U)

THIS REPORT DESCRIBES THE RESULTS OF AN EXPERIMENT FOR EVALUATING THE CONTROLLER/COMPUTER INTERFACE IN AN ARTS III/M AND S SYSTEM MODIFIED FOR USE WITH A SIMULATED DIGITAL DATA LINK AND A VOICE LINK UTILIZING A COMPUTER-GENERATED VOICE SYSTEM. A MODIFIED ARTS III M AND S SYSTEM AT THE NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER (NAFEC) PROVIDED THE MEANS FOR DETERMINING WHICH OF THREE CANDIDATE CONTROL AND DISPLAY MODES WAS THE MOST SUITABLE FOR THE DISPLAY AND DISPATCH OF COMPUTER-GENERATED M AND S COMMANDS IN A MIXED VOICE/DIGITAL COMMUNICATIONS ENVIRONMENT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZUM07

AD-B001 372 9/2 17/2.1
NAVAL SURFACE WEAPONS CENTER DAHLGREN LAB VA

INITIAL SOFTWARE FOR EMPASS EP-3A DIGITAL SYSTEM. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JAN 75 41P CAMPBELL,ALICE J. ;PALMER, BENNETT S. ;
REPT. NO. NSWC/DL-TR-3212

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA ACQUISITION, *SIGNAL PROCESSING), (*RADIO RECEIVERS, *COMPUTER PROGRAMS), (*RADIO SIGNALS, *DATA STORAGE SYSTEMS), TIME SHARING, INFORMATION, SEARCHING, INTERROGATION, INFORMATION RETRIEVAL, DATA PROCESSING, DIGITAL COMPUTERS, MAGNETIC TAPE, DIGITAL RECORDING SYSTEMS, NAVIGATION, NAVAL AIRCRAFT, DATA BASES, INPUT OUTPUT PROCESSING, DATA PROCESSING EQUIPMENT, REAL TIME, TELEVISION DISPLAY SYSTEMS, GRAPHICS, OPERATORS(PERSONNEL), REMOTE TERMINALS, ERRORS, ON LINE SYSTEMS, TACTICAL ANALYSES, AIRBORNE, NAVIGATION COMPUTERS, DATA TRANSMISSION SYSTEMS, ELECTRONIC AIRCRAFT (U)
IDENTIFIERS: UNIVAC 1830A COMPUTERS, EMPASS(ELECTROMAGNETIC PERFORMANCE OF AIR AND SHIP SYSTEMS), ELECTROMAGNETIC PERFORMANCE OF AIR AND SHIP SYSTEMS, CDC 6700 COMPUTERS, EP-3A AIRCRAFT, P-3 AIRCRAFT (U)

A DIGITAL SYSTEM DEVELOPED TO SUPPORT THE ELECTROMAGNETIC PERFORMANCE OF AIR AND SHIP SYSTEMS (EMPASS) PROJECT AS NSWC/DL IS REPORTED. THE AIRBORNE SYSTEM CONSISTS OF RF RECEIVERS AND ANTENNAS WITH SPECIAL RELAYS AND INTERFACE UNITS WHICH ALLOW A UNIVAC 1830A COMPUTER TO INTERROGATE AND CONTROL THEM. AIRCRAFT POSITION, RF SIGNAL, AND SYSTEM STATUS MEASUREMENTS ARE RECORDED DIGITALLY ON MAGNETIC TAPE WHILE OPERATOR DISPLAYS ARE PROVIDED FOR SOME IMMEDIATE DATA ANALYSIS AND SYSTEM MONITORING. THE SOFTWARE FOR THIS DATA ACQUISITION SYSTEM WAS DESIGNED AND DEVELOPED AT NSWC/DL AND IS CURRENTLY BEING USED ON TEST AND MEASUREMENT MISSIONS OF THE EMPASS AIRCRAFT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-B005 229 1778 1777
WESTINGHOUSE DEFENSE AND ELECTRONIC SYSTEMS CENTER
BALTIMORE MD SYSTEMS DEVELOPMENT DIV

DIGITAL CORRELATION TRACKER, PHASE I.
COMPUTER SIMULATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. OCT 73-JUN 74,
MAR 75 445P WOOLFSON,M. G. ;BENTLEY,F.
C. ;COFFEY,D. W. ;SCHUBERT,C. J. ;
CONTRACT: F29601-74-C-0024
PROJ: AF-317J
TASK: 7
MONITOR: AFWL TR-74-170

UNCLASSIFIED REPORT

DESCRIPTORS: (*CORRELATORS, *TRACKING),
(*CORRELATION TECHNIQUES, *COMPUTERIZED
SIMULATION), (*ALGORITHMS, TRACKING), EDGES,
AUTOMATIC, DIGITAL SYSTEMS, IMAGES, TARGET
ACQUISITION, VIDEO TAPE RECORDING, COMPUTER
PROGRAMS, DIGITAL COMPUTERS, TELEVISION TRACKING,
INFRARED IMAGES (U)
IDENTIFIERS: *CENTROID TRACKING, RANDOM WALK,
*EDGE TRACKING, *CORRELATION TRACKING (U)

THE CONCLUSIONS DERIVED FROM AN ANALYTICAL
INVESTIGATION OF THE PERFORMANCE OF SEVERAL TRACKERS
ARE DESCRIBED IN THIS FINAL TECHNICAL REPORT ON
PHASE I OF THE DIGITAL CORRELATION TRACKER
PROGRAM. THE TRACKERS INVESTIGATED UTILIZE EDGE,
CENTROID, AND DIGITAL CORRELATION ALGORITHMS TO
DERIVE ERROR SIGNALS FOR DIRECTING THE LINE OF SIGHT
OF AN IMAGING SENSOR AT A TARGET WITHIN ITS FIELD OF
VIEW. A COMPUTER SIMULATION PACKAGE FOR
IMPLEMENTATION ON THE CDC 6600 WAS DEVELOPED FOR
THIS ANALYSIS. REAL INPUT TARGET IMAGERY DATA WERE
SUPPLIED FROM THE AFWL FIELD TEST TELESCOPE.
A PRELIMINARY DIGITAL CORRELATION TRACKER DESIGN
FOR MECHANIZATION OF THE CORRELATION ALGORITHM WHICH
DEMONSTRATED MOST PRECISE TRACKING PERFORMANCE IS
PRESENTED TOGETHER WITH THE PLANS FOR A SECOND-PHASE
EFFORT FOR ITS FABRICATION AND TEST. THE COMPUTER
SIMULATION DEMONSTRATED THE SUPERIOR PERFORMANCE OF
THE CORRELATION TRACKER FOR PRECISE TRACKING OF FINE
TARGET DETAIL UNDER VARYING BACKGROUND CONDITIONS.
THE CORRELATION TRACKER AFFORDED CONSTANT GAIN
INDEPENDENT OF THE PATTERN OF THE IMAGE AND SHOWED
THE LEAST TRACKING NOISE OR JITTER. (AUTHOR) (U)

CORPORATE AUTHOR - MONITORING AGENCY

•ADAPTRONICS INC MCLEAN VA

• • •

676-FTR
COMPUTER SIMULATION OF RPV FLIGHT CHARACTERISTICS.
(AMRL-TR-73-119)
AD- 781 079

•ADVANCED TECHNOLOGY LABS INC WESTBURY N Y

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ATL-TM-184
DESCRIPTION OF FORTRAN PROGRAM DAWNA FOR ANALYSIS OF MUZZLE BLAST FIELD.
(BRL-CR-302)
AD-A024 485

•AERODYNE RESEARCH INC BEDFORD MASS

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ARI-RR-68
PLUME ATTENUATED RADAR CROSS SECTION CODE: USER'S MANUAL.
(AFRPL-TR-76-14)
AD-A026 213

•AEROJET SOLID PROPULSION CO SACRAMENTO CALIF

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ASPC-1074-26F
DEVELOPMENT OF A SOLID ROCKET PROPELLANT NONLINEAR CONSTITUTIVE THEORY.
(AFRPL-TR-75-20)
AD-A012 213

•AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO DEPUTY FOR DEVELOPMENT PLANNING

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ASD/XR-74-10-VOL-1
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME I - EXECUTIVE SUMMARY.
AD-A002 850

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ASD/XR-74-10-VOL-2-APP-A
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME II - PROGRAM INTEGRATION AND DATA MANAGEMENT MODULE. APPENDIX A: DATA MANAGEMENT MODULE FLOW CHARTS AND FORTRAN LISTS.
AD-A002 851

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ASD/XR-74-10-VOL-2-PT-1
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME II - PROGRAM INTEGRATION AND DATA MANAGEMENT MODULE. PART 1: PROGRAM INTEGRATION.
AD-A002 852

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ASD/XR-74-10-VOL-2-PT-2
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME II - PROGRAM INTEGRATION AND DATA MANAGEMENT MODULE. PART 2: DATA MANAGEMENT MODULE.
AD-A002 853

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ASD/XR-74-10-VOL-3
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME III - AIRLOADS ESTIMATION MODULE.
AD-A002 854

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ASD/XR-74-10-VOL-4
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME IV - MATERIAL PROPERTIES, STRUCTURE TEMPERATURE, FLUTTER AND FATIGUE.
AD-A002 856

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ASD/XR-74-10-VOL-5-PT-1
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME V - AIR INDUCTION SYSTEM AND LANDING GEAR MODULES. PART 1: AIR INDUCTION SYSTEM MODULE.
AD-A002 857

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ASD/XR-74-10-VOL-5-PT-2
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME V - AIR INDUCTION SYSTEM AND LANDING GEAR MODULES. PART 2: LANDING GEAR MODULE.
AD-A002 858

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ASD/XR-74-10-VOL-6-APP-C
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME VI - WING AND EMPENNAGE MODULE. APPENDIX C: PROGRAM FLOW CHARTS, OVERLAYS (9,0) AND (10,0).
AD-A002 860

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ASD/XR-74-10-VOL-6-APP-D
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME VI - WING AND EMPENNAGE MODULE. APPENDIX D: PROGRAM FLOW CHARTS, OVERLAY (18,0).
AD-A002 861

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ASD/XR-74-10-VOL-6-APP-E
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME VI - WING AND EMPENNAGE MODULE. APPENDIX E: PROGRAM LISTINGS, OVERLAYS (8,0), (14,0), (15,0), (16,0), AND (17,0).
AD-A002 862

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ASD/XR-74-10-VOL-6-APP-F
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME VI - WING AND EMPENNAGE MODULE. APPENDIX F: PROGRAM LISTINGS, OVERLAYS (9,0), (10,0) AND (18,0).
AD-A002 863

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ASD/XR-74-10-VOL-6-BK-1
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME VI - WING AND EMPENNAGE MODULE. BOOK 1: TECHNICAL DISCUSSION SECTIONS I AND II.
AD-A002 864

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ASD/XR-74-10-VOL-6-BK-2
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME VI - WING AND EMPENNAGE MODULE. BOOK 2: TECHNICAL DISCUSSION, SECTIONS III AND IV.
AD-A002 865

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ASD/XR-74-10-VOL-6-BK-3

A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME VI - WING AND EMPENNAGE MODULE. BOOK 3: TECHNICAL DISCUSSION, SECTION V.
AD-A002 866

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ASD/XR-74-10-VOL-7
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME VII - FUSELAGE MODULE.
AD-A002 867

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ASD/XR-74-10-VOL-8
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME III - PROGRAMMER'S MANUAL.
AD-A002 869

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ASD/XR-74-10-VOL-9
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME IX - USER'S MANUAL.
AD-A002 870

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ASD/XR-74-10-VOL-9-APP-A
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME IX - USER'S MANUAL. APPENDIX A.
AD-A002 871

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ASD/XR-74-10-VOL-10
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME X - FLUTTER OPTIMATION STAND-ALONE PROGRAM.
AD-A002 872

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ASD/XR-74-10-VOL-11
A STRUCTURAL WEIGHT ESTIMATION PROGRAM (SWEEP) FOR AIRCRAFT. VOLUME XI - FLEXIBLE AIRLOADS STAND-ALONE PROGRAM.
AD-A002 873

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ASD/XR-74-17-VOL-1
INTERACTIVE COMPUTER-AIDED DESIGN AIRCRAFT FLYING QUALITIES PROGRAM. VOLUME I. USERS MANUAL.
AD- 785 101

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ASD/XR-74-17-VOL-2
INTERACTIVE COMPUTER-AIDED DESIGN AIRCRAFT FLYING QUALITIES PROGRAM. VOLUME II. METHODS FORMULATION MANUAL.
AD- 785 102

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ASD/XR-74-17-VOL-3
INTERACTIVE COMPUTER-AIDED DESIGN AIRCRAFT FLYING QUALITIES PROGRAM. VOLUME III. COMPUTER PROGRAMMING MANUAL.
AD- 785 103

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ASD/XR-74-17-VOL-4
INTERACTIVE COMPUTER-AIDED DESIGN AIRCRAFT FLYING QUALITIES PROGRAM. VOLUME IV. PROGRAM ASSESSMENT/CORRELATION REPORT.
AD- 785 104

•AEROSPACE GUIDANCE AND METROLOGY CENTER NEWARK AIR FORCE STATION OHIO

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AGMC-74-01411
A DESCRIPTION OF A LIFE CYCLE COST MODEL FOR INERTIAL NAVIGATION SYSTEMS.
AD- 785 392

•AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OHIO

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AMRL-HESS-75-1
PROGRAM DOCUMENTATION FOR THE RPV-AUTO SIMULATION PROGRAM.
AD-A013 847

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AMRL-HESS-76-6
PROGRAM DOCUMENTATION FOR THE RPV MISSION CONTROL CENTER SYSTEM SIMULATION PROGRAM.
AD-A028 879

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AMRL-TR-73-108
COMMUNITY NOISE EXPOSURE RESULTING FROM AIRCRAFT OPERATIONS: COMPUTER PROGRAM OPERATOR'S MANUAL.
AD- 785 360

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AMRL-TR-73-119
COMPUTER SIMULATION OF RPV FLIGHT CHARACTERISTICS.
AD- 781 079

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AMRL-TR-75-21
PROGRAM DOCUMENTATION FOR THE RPV-AUTO SIMULATION PROGRAM.
AD-A013 847

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AMRL-TR-76-47
PROGRAM DOCUMENTATION FOR THE RPV MISSION CONTROL CENTER SYSTEM SIMULATION PROGRAM.
AD-A028 879

•AEROSPACE RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

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ARL-73-0107
THE DESIGN OF AXIAL COMPRESSOR AIRFOILS USING ARBITRARY CAMBER LINES.
AD- 765 165

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ARL-73-0124-VOL-2
INVISCID SUPERSONIC NONUNIFORM FLOWS OVER SHARP AND SPHERICALLY BLUNTED CONES AT ANGLE OF ATTACK. VOLUME II. COMPUTER PROGRAM DESCRIPTIONS AND USER'S GUIDE.
AD- 770 169

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ARL-75-0001-VOL-1
A REVISED COMPUTER PROGRAM FOR AXIAL COMPRESSOR DESIGN. VOLUME I. THEORY, DESCRIPTIONS, AND USER'S INSTRUCTIONS.
AD-A009 273

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ARL-75-0001-VOL-2
A REVISED COMPUTER PROGRAM FOR AXIAL COMPRESSOR DESIGN. VOLUME II. PROGRAM LISTING AND PROGRAM USE EXAMPLE.
AD-A009 157

•AEROSPACE SYSTEMS INC BURLINGTON MASS

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NORTH ATLANTIC (NAT) AIDED INERTIAL NAVIGATION SYSTEM SIMULATION. VOLUME II. COMPUTER PROGRAM NATNAV USER'S MANUAL. (FAA-RD-73-112-VOL-2)
AD- 770 073

*AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB OHIO

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AFAPL-TR-72-80
FUEL MODIFICATION FOR ABATEMENT OF AIRCRAFT TURBINE ENGINE OXIDES OF NITROGEN EMISSIONS.
AD- 752 581

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AFAPL-TR-73-69-VOL-1
TRANSONIC FLOW AROUND COMPRESSOR ROTOR BLADE ELEMENTS. VOLUME I. ANALYSIS.
AD- 764 248

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AFAPL-TR-74-13
SIMULATION OF TRIPLE-SPOOL TURBOFAN ENGINE.
AD- 784 771

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DEVELOPMENT OF LIGHTWEIGHT TRANSFORMERS FOR AIRBORNE HIGH POWER SUPPLIES. VOLUME I.
AD-A018 545

*AIR FORCE ARMAMENT LAB EGLIN AFB FLA

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AFATL-TR-71-7-VOL-6
CLOSE AIR SUPPORT WEAPON ENGINEERING DESIGN STUDY. VOLUME VI. MISSILE SIMULATION.
AD- 894 590

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AFATL-TR-72-16-VOL-1
BURST HEIGHT DISTRIBUTION COMPUTER. VOLUME I. USER MANUAL.
AD- 902 532

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AFATL-TR-72-16-VOL-2
BURST HEIGHT DISTRIBUTION COMPUTER MODEL. VOLUME II. ANALYST MANUAL.
AD- 902 627

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AFATL-TR-72-52
PRELIMINARY REPORT ON EXTRACTING AERODYNAMIC COEFFICIENTS FROM DYNAMIC DATA.
AD- 901 513

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AFATL-TR-73-147
A COMPUTER PROGRAM FOR EXTRACTING AERODYNAMIC DATA FROM MAGNETIC TAPE.
AD- 912 646

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AFATL-TR-73-174
COMPUTER ANIMATION.
AD- 773 422

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AFATL-TR-74-32
SIMPLIFIED ANALYTIC AND EXPERIMENTAL INTERIOR BALLISTICS OF LIGHT GAS GUNS.
AD- 919 960

*AIR FORCE CAMBRIDGE RESEARCH LABS HANSCOM AFB MASS

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AFCRL-72-0155
CERTAIN FINITE DIFFERENCE METHODS FOR THE SOLUTION OF LARGE SCALE CIRCULATION PROBLEMS.
AD- 743 934

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AFCRL-TR-73-0030
ANALYSIS OF INTERDIGITAL TRANSDUCERS FOR ACOUSTIC SURFACE WAVE DEVICES.
AD- 757 485

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AFCRL-TR-73-0229
A STUDY OF THE CHARACTERISTICS OF THE LONG TERM FLUCTUATIONS OF THE GEOMAGNETIC FIELD.
AD- 759 797

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AFCRL-TR-73-0531
SPACE FORECASTING DATA PROCESSING SYSTEMS.
AD- 766 767

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AFCRL-TR-73-0657
DOCUMENTATION AND DESCRIPTION OF THE BENT IONOSPHERIC MODEL.
AD- 772 733

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AFCRL-TR-73-0700
STRATOSPHERIC BALLOON AEROSOL PARTICLE COUNTER MEASUREMENTS.
AD- 777 135

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AFCRL-TR-74-0391
A FORTRAN IV PROGRAM FOR THE DETERMINATION OF THE ANOMALOUS POTENTIAL USING STEPWISE LEAST SQUARES COLLOCATION.
AD-A006 362

*AIR FORCE FLIGHT DYNAMICS LAB WRIGHT-PATTERSON AFB OHIO

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AFFDL-TR-68-43-PT-1
RANDOM-VIBRATION ANALYSIS SYSTEM FOR COMPLEX STRUCTURES. PART I: ENGINEERING USER'S GUIDE.
AD- 845 604

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AFFDL-TR-71-71
A HYBRID COMPUTER PROGRAM TO COMPUTER SIMULATE A PILOT CONTROLLED AIRCRAFT.
AD- 740 434

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AFFDL-TR-71-117-PT-2
NUCLEAR DEBRIS ATTACHMENT TO AIRCRAFT DUE TO ATMOSPHERIC RADIATION ENVIRONMENTS. PART II. AIRCRAFT IMPACTION AND ADHESION COMPUTER MODEL.
AD- 771 585

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AFFDL-TR-71-123-VOL-1
DEVELOPMENT OF WEAPON DELIVERY MODELS AND ANALYSIS PROGRAMS. VOLUME I. SYSTEM MODELING AND PERFORMANCE OPTIMIZATION.
AD- 751 505

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AFFDL-TR-71-123-VOL-2
DEVELOPMENT OF WEAPON DELIVERY MODELS AND ANALYSIS PROGRAMS. VOLUME II. DOCUMENTATION OF THE ARMAMENT DELIVERY ANALYSIS PROGRAMMING SYSTEM (ADAPS).

AD- 751 506

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AFFDL-TR-71-123-VOL-3
DEVELOPMENT OF WEAPON DELIVERY MODELS AND ANALYSIS PROGRAMS. VOLUME III. TESTING AND DEMONSTRATION OF THE ARMAMENT DELIVERY ANALYSIS PROGRAMMING SYSTEM (ADAPS).
AD- 751 527

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AFFDL-TR-71-128-VOL-1
DEMONSTRATION OF COMBINED RELIABILITY PREDICTION AND VERIFICATION TECHNIQUES TO A TYPICAL FLIGHT CONTROL SYSTEM. VOLUME I. DEVELOPMENT AND APPLICATION OF TABULAR SYSTEM RELIABILITY ANALYSIS TO THE F-111 PITCH FLIGHT CONTROL SYSTEM.
AD- 889 264

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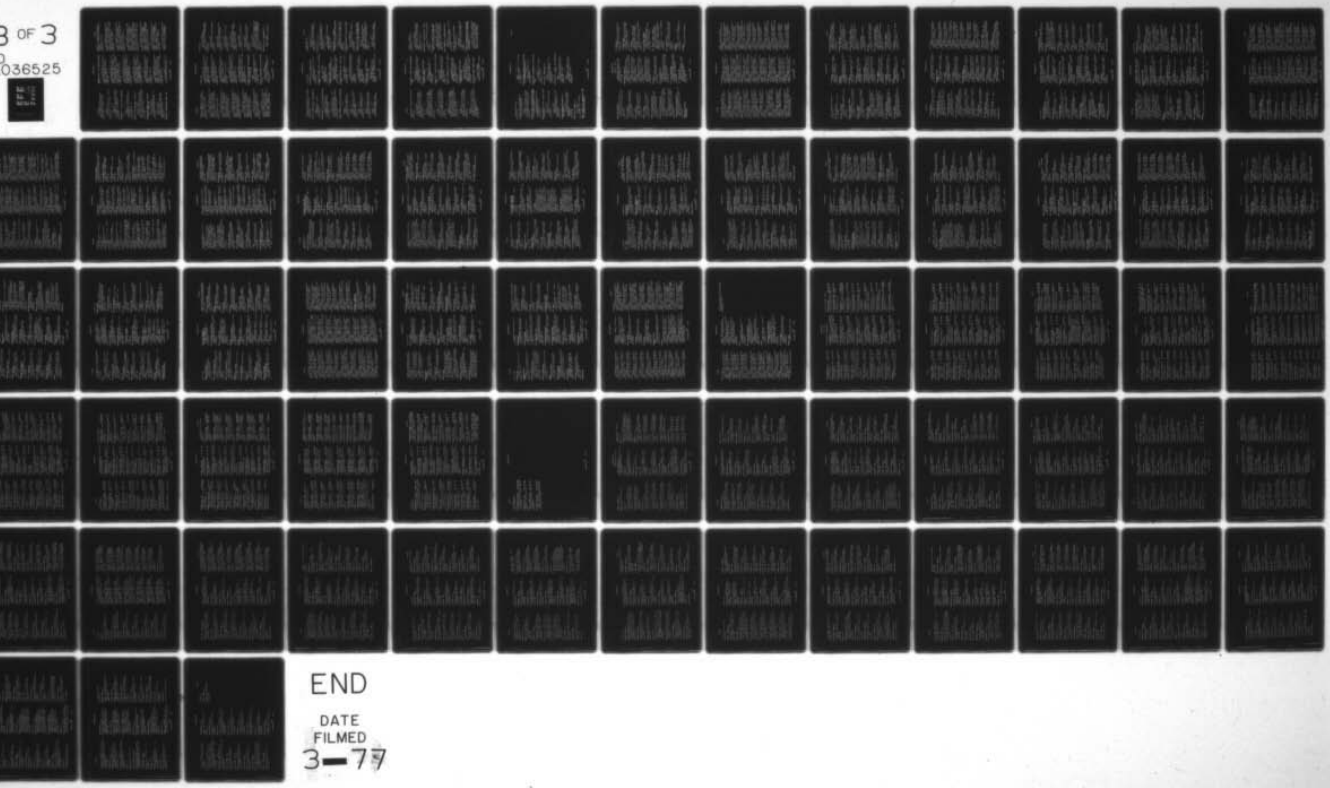
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