AD/A-001 400

USE OF COMPUTERS IN HUMAN FACTORS ENGINEERING

DEFENSE DOCUMENTATION CENTER

NOVEMBER 1974

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

This bibliography contains 178 references to reports pertiment to the application of techniques for computer handling of human factors data.

The indexes included are Corporate Author-Monitoring Agency and Subject.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

F O R E W O R D

This bibliography contains 178 references to reports processed in the Defense Documentation Center's data bank from January 1953 through August 1974.

Pertinent references to the application of techniques for computer handling of human factors data are included in this bibliography.

The indexes are: Corporate Author-Monitoring Agency and Subject.

BY ORDER OF THE DIRECTOR, DEFENSE SUPPLY AGENCY

OFFICIAL

Hubert E. Sauter

HUBERT E. SAUTER
Administrator
Defense Documentation Center

C O N T E N T S

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-247 346
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

MAN-COMPUTER SYMBIOSIS (U)

JAN 60 8P LICKLIDER,J.C.R.;
CONTRACT: AF49 638 355
MONITOR: AFOSR TN-60-1191

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTERS, *HUMAN FACTORS ENGINEERING, *HUMANS, DATA PROCESSING, LANGUAGE, MEMORY(PSYCHOLOGY(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-255 518
APPLIED PSYCHOLOGICAL SERVICES VILLANOVA PA

TECHNIQUES FOR EVALUATING OPERATOR LOADING IN MAN-MACHINE SYSTEMS. A MODEL FOR DIGITAL SIMULATION OF ONE AND TWO-OPERATOR MAN-MACHINE SYSTEMS (U)

MAR 61 IV SIEGEL,ARTHUR I.;WOLF,J. JAY;CRAIN, KENNETH:

CONTRACT: NONR249200

UNCLASSIFIED REPORT

DESCRIPTORS: *APPLIED PSYCHOLOGY, *HUMAN FACTORS ENGINEERING, COMPUTERS, DESIGN, DIGITAL COMPUTERS, FEEDBACK, FLIGHT SIMULATORS, LOADING, OPERATORS (PERSONNEL), REFUELING, SIMULATION, STRESS (PSYCHOLOGY) (U)

THE EXTENSION OF A MODEL, WHICH HAD AS ITS AIM THE PREDICTION OF THE EFFECTIVENESS OF UNI-OPER-ATOR MAN-MACHINE SYSTEMS, TO SIMULATE TWO-OPERATOR SYSTEMS IS DESCRIBED. THE TWO-OPERATOR MODEL MAY ALSO BE EMPLOYED FOR EVALUATING UNI-OPERATOR SYSTEMS. A HIGH SPEED DIGITAL COMPUTER IS USED TO CALCULATE AND RECORD SIMULATED OPERATOR PERFORMANCE DATA FOR EVERY ACTION OF EACH OPERATOR AND TO YIELD AN INDICATION OF SYSTEM EFFECTIVENESS ON THE BASIS OF THESE SIMULATIONS. AFTER DEVELOPMENT, THE MODEL WAS APPLIED TO THE SIMULATION OF IN-FLIGHT REFUELING OF AN F8U RECEIVER AIRCRAFT BY AN A4D TANKER AIRCRAFT. THE MANEUVERS AND ACTIONS OF THE F8U PILOT DURING APPROACH AND PROBE INSERTION AS WELL AS THE CONCOMITANT ACTIONS OF THE TANKER AIRCRAFT PILOT DURING THIS FLIGHT TASK WERE SIMULATED. THE RESULTS FROM THE MODEL AS REFLECTED THROUGH THE DIGITAL SIMULATION WERE COMPARED WITH EMPIRICAL CRITERION DATA ON ACTUAL IN-FLIGHT REFUELING SUCCESS AND WERE FURTHER EVALUATED ON THE BASIS OF THEIR COMPATIBILITY WITH LOGICAL EXPECTATION. THE RESULTS FROM THIS INITIAL APPLICATION OF THE MODEL, APPEAR TO CONFORM WITH REALITY AND ARE GENERALLY REASONABLE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-259 296
HUMAN SCIENCES RESEARCH INC MCLEAN VA

A COMPARISON OF TWO DIVERSE METHODOLOGICAL APPROACHES TO RESEARCH ON COMPLEX SYSTEMS (U)

NOV 59 IV VAUGHAN,W.S. JR.;MCGRATH,J.E.;
REPT. NO. RM 59 22 SM
CONTRACT: NONR252500

UNCLASSIFIED REPORT

DESCRIPTORS. *OPERATIONS RESEARCH, *RESEARCH MANAGEMENT, DATA PROCESSING, HUMAN FACTORS ENGINEERING, MATHEMATICAL ANALYSIS, SCIENTIFIC RESEARCH (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-259 453
GENERAL ELECTRIC CO SANTA BARBARA CALIF TECHNICAL MILITARY PLANNING OPERATION

THREAT EVALUATION AND ACTION SELECTION FOR THE 1965-1975 STRATEGIC ENVIRONMENT. TASK I. HUMAN FACTORS STUDY (U)

DEC 59 IV DOSSETT,WILLIAM
REPT. NO. RM 59 TMP 54
CONTRACT: AF19 604 5881
MONITOR: AFCRL TR59 196 3

UNCLASSIFIED REPORT

DESCRIPTORS: *BEHAVIOR, *COMMUNICATION THEORY, *COMPUTERS, *HUMAN FACTORS ENGINEERING, *NATIONAL DEFENSE, *REACTION (PSYCHOLOGY), *STRATEGIC AIR COMMAND, *STRESS (PSYCHOLOGY), *WAR POTENTIAL, CONTROL SYSTEMS, EMOTIONS, GROUP DYNAMICS, LEADERSHIP, MODEL TESTS, SELECTION, SOCIAL COMMUNICATION, SOCIOMETRICS, SPEECH TRANSMISSION, THEORY (U)

THE PURPOSE OF THIS REPORT IS TO MAKE A PRELIMINARY ANALYSIS OF MAN AS A POSSIBLE COMPONENT IN A THREAT EVALUATION AND ACTION SELECTION SYSTEM (TEAS). THE MAJOR OBJECTIVE OF TEAS IS TO FUNCTION AS A SPECIALIZED STRATEGIC DETERRENT SYSTEM OPERATING TO MITIGATE THE THREAT POSED BY PREMEDITATED ATTACK. IN GENERAL, THE SYSTEM WILL BE CAPABLE OF DETECTING THE EXISTENCE OF, AND EVALUATING THE NATURE AND MAGNITUDE OF ANY THREAT POSED BY A POTENTIALLY HOSTILE NATION. FURTHERMORE, THE CAPABILITIES OF THE SYSTEM WILL ENABLE THE SELECTION OF AN APPROPRIATE SET OF COUNTERACTIONS BASED ON A PREVIOUSLY FORMULATED GRADUATED COMMITMENT OF RESPONSE DOCTRINE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-260 063
STANFORD RESEARCH INST MENLO PARK CALIF

THE STRUCTURING AND ANALYSIS OF COMPLEX SYSTEM PROBLEMS (U)

MAY 61 IV SCHAEFFER,K.H.;SHAPERO,ALBERT;
CONTRACT: AF49 638 1020
MONITOR: AFOSR 810

UNCLASSIFIED REPORT

DESCRIPTORS: *OPERATIONS RESEARCH, ANALYSIS, COMMUNICATION THEORY, COMPUTERS, DESIGN, HUMAN FACTORS ENGINEERING, MATHEMATICAL COMPUTER DATA, SYMPOSIA (U)

MANY COMPLEX SYSTEMS CONSIST OF TOO MANY DIFFERENT TYPES OF ELEMENTS AND ARE INFLUENCED BY TOO MANY FACTORS TO LEND THEMSELVES READILY TO CONCEPTUALIZATION THROUGH MATHEMATICAL MODELS, WITHOUT INTRODUCING UNREALISTIC OVERSIMPLIFICATIONS. TO STRUCTURE SUCH SYSTEMS REALIZTICALLY, AN APPROACH HAS BEEN DEVELOPED WHICH BEGINS WITH THE CLASSIFICATION OF THE ELEMENTS AFFECTING THE SYSTEM AND THE DETERMINATION OF THE EXISTENCE OF CERTAIN TYPES OF RELATIONS BETWEEN THESE ELEMENTS. THE APPROACH WHICH IS KNOWN AS THE SYSTEM ANALYSIS AND INTEGRATION MODEL (SAIM) HAS BEEN APPLIED TO THE ANALYSIS OF A NUMBER OF SYSTEM PROBLEMS CONCERNING WEAPON SYSTEM DEVELOPMENT, INCLUDING COMMAND AND CONTROL. OTHER PROBLEM AREAS TO WHICH THE METHOD HAS BEEN APPLIED ARE THE ANALYSIS OF POSTATTACK RECOVERY, POLITICAL CONFLICTS, AND LARGE-SCALE ORGANIZATIONS. THE PAPER CONCLUDES WITH A DISCUSSION OF THE FUNCTION OF THIS GENERAL APPROACH IN THE DEVELOPMENT OF FORMAL MODELS WHICH REALISTICALLY REPRESENT COMPLEX SYSTEM PROBLEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-260 311
MICHIGAN UNIV ANN ARBOR INST OF SCIENCE AND TECHNOLOGY

PROBLEMS IN MEETING FUTURE COMBAT SURVEILLANCE DISPLAY REQUIREMENTS (U)

JUN 61 1V DEVOE,R.P.;HOAGBIN,J.E.;
REPT. NO. 2900 275 S
CONTRACT: DA36 039SC78801

UNCLASSIFIED REPORT

DESCRIPTORS: *COMBAT INFORMATION CENTERS, *DATA PROCESSING, *DISPLAY SYSTEMS, *MILITARY INTELLIGENCE, CODING, CORRELATION TECHNIQUES, EFFECTIVENESS, HUMAN FACTORS ENGINEERING, MAPS, OPTICAL IMAGES, RADAR INTERFERENCE, SYMPOSIA, VISION, VISUAL ACUITY (U)

RESEARCH WAS CONCERNED WITH THE COMPLEX VISUAL DISPLAYS FOR SYSTEMS IN WHICH HUMAN OPERATORS ARE REQUIRED TO RAPIDLY ASSOCIATE MANY DIFFERENT TYPES OF INFORMATION AND CORRECTLY CORRELATE THEM. DISPLAY PROBLEMS ASSOCIATED WITH THE INTERMEDIATE PROCESSING OF COMBAT SURVEILLANCE INFORMATION ARE DISCUSSED, AND AREAS OF RESEARCH THAT WOULD MAKE POSSIBLE THE DESIGN OF BETTER DISPLAYS ARE SUGGESTED. TWO OF THE MOST VEXING PROBLEMS THAT ARE BEING INVESTIGATED ARE THOSE OF CLUTTER AND KEYSET. THE SOLUTION TO THESE PROBLEMS WILL REQUIRE MORE RESEARCH.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-260 505
OPERATIONAL APPLICATIONS OFFICE AIR FORCE ELECTRONIC SYSTEMS DIV BEDFORD MASS

PLANS FOR MAN-COMPUTER COMMUNICATIONS RESEARCH USING THE RELIABILITY TEST ASSEMBLY COMPUTER AND THE ADVANCED DISPLAY CONSOLE AS RESEARCH TOOLS (U)

JUN 61 IV

UNCLASSIFIED REPORT

DESCRIPTORS: •DATA PROCESSING, •DISPLAY SYSTEMS, •HUMAN FACTORS ENGINEERING, COMMUNICATION THEORY, COMPUTERS, RELIABILITY, TEST EQUIPMENT, TESTS (U)
IDENTIFIERS: MITRE, SAGE (U)

THE ADVANCED DISPLAY CONSOLE AND RTA COMPUTER DEVELOPED UNDER SAGE II CONTRACTS WILL BE MODIFIED FOR USE IN MAN-MACHINE COMMUNICATIONS EXPERIMENTS. MAN-MACHINE COMMUNICATION PROCEDURE WILL BE STUDIED IN FIVE ASPECTS: (1) PREPARATION OF DATA TO MAKE UP VISUAL MESSAGES, (2) PRESENTATION OF THE MESSAGES, (3) RETRIEVAL OF DATA NOT ALREADY DISPLAYE , (4) CHOICE BEHAVIOR OF THE MAN, AND (5) PROCESSING OF THE MAN'S OUTPUT. PRESENT SCHEDULING INDICATES FULL AVAILABILITY OF THE EQUIPMENT FOR COM UNICATIONS EXPERIMENTS BY 1 FEBRUARY 1962. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-261 626
TECHNICAL OPERATIONS INC BURLINGTON MASS

DISPLAY SYSTEMS FOR DIGITAL SIMULATIONS (U)

SEP 60 1V KUGEL,PETER:
REPT. NO. B 60 40
CONTRACT: AF33 600 35190

UNCLASSIFIED REPORT

DESCRIPTORS: *DIGITAL COMPUTERS, COMPUTERS, DIGITAL SYSTEMS, HUMAN FACTORS ENGINEERING, PROGRAMMING (COMPUTERS), SIMULATION (U)

THIS REPORT DEALS WITH SYSTEMS TO HELP HUMAN BEINGS INTERPRET THE OUTPUTS OF DIGITAL COMPUTERS BY HAVING MACHINES PERFORM MANY OF THE MORE MECHANICAL TASKS INVOLVED IN INTERPRETATION. THE AIMS OF SUCH SYSTEMS AND THE CAPABILITIES WHICH THEY SHOULD HAVE TO ACCOMPLISH THESE AIMS ARE CONSIDERED. THE REPORT ALSO SUGGESTS GENERAL SPECIFICATIONS FOR A PARTICULAR SYSTEM, PROVIDES A FRAMEWORK WITHIN WHICH THIS SYSTEM CAN BE DEALT WITH FURTHER, AND CONTAINS SOME SUGGESTIONS FOR IMPLEMENTING CONSTRUCTION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-261 956
APPLIED PSYCHOLOGICAL SERVICES VILLANOVA PA

TECHNIQUES FOR EVALUATING OPERATOR LOADING IN MAN-MACHINE SYSTEMS. A FURTHER APPLICATION OF A MODEL FOR DIGITAL SIMULATION OF ONE OR TWO-OPERATOR MAN-MACHINE SYSTEMS (U)

JUN 61 IV [illegible]AUTHOR I.;WOLF,J. JAY;
CONTRACT: NONR249200

UNCLASSIFIED REPORT

DESCRIPTORS: *APPLIED PSYCHOLOGY, HUMAN FACTORS ENGINEERING, AIRCRAFT INTERCEPT CONTROL SYSTEMS, COMPUTERS, DESIGN, DIGITAL COMPUTERS, EFFECTIVENESS, FEEDBACK, FLIGHT SIMULATORS, OPERATORS (PERSONNEL), REFUELING, SIMULATION, [illegible]S (PSYCHOLOGY), TEST METH(U)

THE PURPOSE OF THE TECHNIQUE IS TO ALLOW PREDICTION OF SYSTEM EFFECTIVENESS WHILE A SYSTEM IS IN THE EARLY DESIGN STAGE AND/OR COMPARATIVE EVALUATION OF ALTERNATIVE SYSTEM DESIGNS. THE MODEL IS BASED ON THE USE OF A DIGITAL COMPUTER WHICH SEQUENTIALLY SIMULATES OPERATOR PERFORMANCE OF EACH SUBTASK IN A TOTAL TASK. AS A RESULT OF VARIOUS CALCULATIONS, OUTPUT RECORDS ARE OBTAINED OF SUBTASK SUCCESS OR FAILURE, TASK SUCCESS OR FAILURE, PEAK STRESS, TERMINAL STRESS, IDLE TIME, WAITING TIME, TEAM COHESIVENESS, AND, IN THE EVENT OF SUCCESSFUL TASK COMPLETION, TIME AVAILABLE BUT UNSPENT. THE METHOD AND RESULTS OF APPLYING THE TECHNIQUE TO AN AIR INTERCEPT BY A TEAM COMPOSED OF A PILOT AND A RADAR-OBSERVER ARE REPORTED. NO STATISTICALLY SIGNIFICANT DIFFERENCES WERE OBTAINED BETWEEN THE PREDICTIONS FROM THE MODEL AND REAL LIFE, OUTSIDE CRITERIA DATA FOR THE SAME TASK. GENERALLY, THE RESULTS FROM THE MODEL WERE RATIONAL AND CONFORMED WITH EXPECTANCY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-262 119
HUMAN FACTORS RESEARCH INC LOS ANGELES CALIF

HUMAN INFORMATION TRANSMISSION AS A FUNCTION OF SELECTED VISUAL AND AUDITORY STIMULUS DIMENSIONS (U)

JUL 61 1V BUCKNER,DONALD N.;HARABEDIAN,ALBERT;
CONTRACT: NONR245300

UNCLASSIFIED REPORT

DESCRIPTORS: *COMMUNICATION SYSTEMS, *COMMUNICATION THEORY, *HUMAN FACTORS ENGINEERING, DATA PROCESSING, DATA TRANSMISSION SYSTEMS, HEARING, REACTION (PSYCHOLOGY), SENSES(PHYSIOLOGY), STIMULATION(PHYSIOLOGY), TESTS, THRESHOLDS (PHYSIOLOGY) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-262 166
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

A SURVEY OF CHECKOUT EQUIPMENT USED IN AIR FORCE WEAPON SYSTEMS, WITH EMPHASIS ON THE MAN-MACHINE RELATIONSHIP (U)

MAY 61 IV POPE,LOUIS T.;
MONITOR: ASD TN61 38

UNCLASSIFIED REPORT

DESCRIPTORS: *HUMAN FACTORS ENGINEERING, AIRCRAFT EQUIPMENT, AUTOMATIC, AUTOMATION, DESIGN, GUIDED MISSILES, TEST EQUIPMENT, TESTS, WEAPONS (U)

ENGINEERING FILES OF 13 AIR FORCE WEAPON SYSTEMS WERE SEARCHED FOR INFORMATION ON THE VARIOUS TYPES OF CHECKOUT EQUIPMENT IN USE BY THE AIR FORCE TODAY. IN THIS SEARCH, EMPHASIS WAS PLACED ON THE MAN-MACHINE RELATIONSHIPS INVOLVED IN THE OPERATION OF THE EQUIPMENT. THE INFORMATION WAS USED IN DEVELOPING A TENTATIVE LEVEL-OF-AUTOMATION SCALE; AND 37 ITEMS OF CHECKOUT EQUIPMENT W RE RATED ON THIS SCALE. CHECKOUT EQUIPMENT PROBLEM AREAS WHICH SHOULD BE INVESTIGATED ARE IDENTIFIED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-262 481
AMELCO INC LOS ANGELES CALIF

DATA PROCESSING. THE EXTENSION OF MAN'S SENSORS AND PHYSICAL CAPABILITIES. ANIP RESEARCH (U)

JUN 61 1V

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING, *HUMAN FACTORS ENGINEERING, COMPUTERS, DIGITAL SYSTEMS, ELECTRONICS, EQUATIONS, INSTRUMENTATION (U)

CONTENTS: DATA PROCESSING WHAT IS DATA PROCESSING DERIVATION OF ENERGY-INFORMATION RELATION THE OVER-ALL SYSTEM THE DATA PROCESSING SYSTEM REMARKS CONCERNING FUNCTION GENERATORS SYSTEM BLOCK DIAGRAM A METHODOLOGY FOR EVALUATING DATA PROCESSING SYSTEMS INFORMATION FLOW VS CLOCK RATE INFORMATION CHANNEL CAPACITY ANALYSIS OF SOME EXISTING SYSTEMS OTHER PARAMETERS MICROELECTRONICS SUMMARY OF MICROELECTRONICS TO DATE PHASE I-- APPLICATION TO PRODUCTION: THE FUNCTIONAL ARRAY (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-262 498
DOUGLAS AIRCRAFT CO INC EL SEGUNDO CALIF

HUMAN FACTORS FOR ARMY-NAVY INSTRUMENTATION PROGRAM (U)

AUG 61 1V
REPT. NO. ES 40394
CONTRACT: NONR107600

UNCLASSIFIED REPORT

DESCRIPTORS: *FLIGHT SIMULATORS, *HUMAN FACTORS ENGINEERING, ANALYSIS, CONTROL SYSTEMS, DATA PROCESSING, DISPLAY SYSTEMS, FLIGHT, FLIGHT TESTING, INSTRUMENTATION, RECORDING PAPER, TELEVISION EQUIPMENT, TEST EQUIPMENT (U)

THIS DOCUMENT REVIEWS THE TERMS OF REFERENCE, THE PREMISES AND THE PROGRESS OF THE HUMAN FACTORS ASPECTS OF THE ARMY-NAVY INSTRUMENT PROGRAM AS CONTROLLED BY THE DOUGLAS AIRCRAFT COMPANY AND REPORTS ACHIEVEMENTS GAINED ELSEWHERE BOTH WITHIN AND OUTSIDE THE PROGRAM. PROPOSED AREAS AND PRIORITIES FOR ADDITIONAL RESEARCH AND APPLICATION ARE ALSO INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-263 643
HRB-SINGER INC STATE COLLEGE PA

DISPLAY PROBLEMS IN AEROSPACE SURVEILLANCE SYSTEMS. PART I. A SURVEY OF DISPLAY HARDWARE AND ANALYSIS OF RELEVANT PSYCHOLOGICAL VARIABLES (U)

JUN 61 257P CRUMLEY,LLOYD;DIVANY,RICHARD;
REPT. NO. HRB-256-R-2-PT-1
CONTRACT: AF19 604 7368
MONITOR: ESD TR61 33

UNCLASSIFIED REPORT

DESCRIPTORS: *ANTIAIRCRAFT DEFENSE SYSTEMS, *CATHODE RAY TUBES, *DISPLAY SYSTEMS, *HUMAN FACTORS ENGINEERING, *PHOTOGRAPHIC RECORDING SYSTEMS, AERIAL TARGETS, BRIGHTNESS, COLORS, DATA PROCESSING, DATA STORAGE SYSTEMS, DATA TRANSMISSION SYSTEMS, DETECTION, PLASTICS, PSYCHOLOGY, RECORDING SYSTEMS, SENSES(PHYSIOLOGY), THERMOPLASTIC RESINS, VISUAL ACUITY (U)

RESEARCH CONCERNS DETERMINATION OF THE INFORMATION PRESENTATION REQUIREMENTS OF HUMAN DATA PROCESSING ROLES IN FUTURE AIR AND AEROSPACE SURVEILLANCE SYSTEMS. DISPLAY PARAMETERS AND OPERATOR CHARACTERISTICS WHICH ARE RELEVANT TO DISPLAY SELECTION ARE DESCRIBED, AND REVIEWS OF SOME OF THE PERTINENT LITERATURE ARE PRESENTED. THE DESCRIPTION AND SPECIFICATION OF OPERATOR ROLES IS ALSO INCLUDED; THESE ROLES ARE BASED UPON A CONCEPTUAL MODEL OF FUTURE AIR AND AEROSPACE SURVEILLANCE SYSTEM AND A REVIEW OF THE STATE OF THE ART IN DISPLAYS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-266 320
PSYCHOLOGICAL RESEARCH ASSOCIATES INC ARLINGTON VA

A DATA ORGANIZATION MODEL FOR THE PERSONNEL SUBSYSTEM (U)

SEP 61 1V MARKS,MELVIN R.

CONTRACT: AF33 616 5738
MONITOR: ASD TR61 447

UNCLASSIFIED REPORT

DESCRIPTORS: *AVIATION PERSONNEL, *HUMAN FACTORS ENGINEERING, AIRCRAFT, CODING, DATA, DATA PROCESSING, DATA STORAGE SYSTEMS, GROUND SUPPORT EQUIPMENT, GUIDED MISSILES, MAINTENANCE PERSONNEL, REPORTS (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-269 110
LOCKHEED AIRCRAFT CORP BURBANK CALIF

RESEARCH DIRECTED TOWARD DESIGN AND DEVELOPMENT OF EXPERIMENTAL DATA PROCESSING EQUIPMENT (U)

NOV 61 1V
CONTRACT: AF19 604 6104
MONITOR: AFCRL 977

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING, *LABORATORIES, AIR TRAFFIC CONTROL SYSTEMS, AIRCRAFT INTERCEPTION, APPLIED PSYCHOLOGY, COMMAND AND CONTROL SYSTEMS, CONTROL SYSTEMS, DESIGN, GUIDED MISSILES, HUMAN FACTORS ENGINEERING, RELIABILITY, SIMULATION (U)
IDENTIFIERS: AN/TSQ-13 (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-271 440
HRB-SINGER INC STATE COLLEGE PA

DISPLAY PROBLEMS IN AEROSPACE SURVEILLANCE SYSTEMS (U)

DESCRIPTIVE NOTE: FINAL REPT.
OCT 61 122P GRANT,GEORGE;HOSTETTER,ROBERT;
REPT. NO. HRB-256-F
CONTRACT: AF19 604 7368
MONITOR: ESD TDR61 57

UNCLASSIFIED REPORT

DESCRIPTORS: •AERIAL RECONNAISSANCE, •DISPLAY SYSTEMS, AIR CONTROL CENTERS, CODING, COLORS, COMBAT INFORMATION CENTERS, COMMUNICATION THEORY, CONFIGURATION, DATA PROCESSING, DESIGN, HUMAN FACTORS ENGINEERING, RADAR EQUIPMENT, TARGET RECOGNITION, TARGETS (U)

THE OVER-ALL OBJECTIVE WAS TO DETERMINE THE INFORMATION PRESENTATION REQUIREMENTS FOR HUMAN DATA PROCESSING ROLES IN FUTURE AIR AND AEROSPACE SURVEILLANCE SYSTEMS. THE CONCLUSIONS AND RECOMMENDATIONS LISTED ARE BASED UPON INFORMATION GATHERED IN A COMPREHENSIVE LITERATURE SEARCH AND PERTINENT DATA REFLECTING THE PRESENT STATE OF THE ART IN DISPLAYS AND RELATED HUMAN DATA PROCESSING ROLES. FROM THE DATA AVAILABLE, THIS REPORT PROVIDES: (1) AN APPROACH TO THE PROBLEM OF SPECIFYING AND COMPARING HUMAN INFORMATION PRESENTATION REQUIREMENTS; (2) A DISCUSSION OF DISPLAY PROBLEMS AND REQUIREMENTS BASED ON CURRENTLY AVAILABLE RESEARCH DATA; (3) A STRUCTURE FOR THE COLLECTION AND USE OF SYSTEM INFORMATION REQUIREMENTS IN DETERMINING DISPLAY NEEDS; (4) A TECHNIQUE (PROFILE METHOD) FOR USE IN SCREENING AND EVALUATING DISPLAYS IN TERMS OF INFORMATIONAL REQUIREMENTS; AND (5) A PROGRAM FOR FUTURE RESEARCH IN AREAS THAT WILL OPTIMIZE MAN AS A COMPONENT IN THE SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-271 948
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

MEASUREMENT OF TIME-VARYING AND NONLINEAR DYNAMIC CHARACTERISTICS OF HUMAN PILOTS (U)

DEC 61 1V ELKIND,JEROME I.;GREEN,DAVID M.;

CONTRACT: AF33 616 7397
MONITOR: ASD TR61 225

UNCLASSIFIED REPORT

DESCRIPTORS: *AVIATION PERSONNEL, *HUMAN FACTORS ENGINEERING, *NONLINEAR SYSTEMS, *PILOTS, COMPUTERS, CONTROL SYSTEMS, CORRELATION TECHNIQUES, EFFECTIVENESS, FLIGHT, MEASUREMENT, SIMULATION, THEORY, TIME (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-272 913
GENERAL DYNAMICS CORP GROTON CONN ELECTRIC BOAT DIV

SUBIC: SHIP CONTROL XIV ADVANCED FBM SUBMARINE SHIP CONTROL CONSOLE (U)

AUG 61 IV BLAIR,W.C.;HENRY,W.O.;
REPT. NO. U411 61 102
CONTRACT: NONR251200

UNCLASSIFIED REPORT

DESCRIPTORS: *COMBAT INFORMATION CENTERS, *CONTROL SYSTEMS, *DISPLAY SYSTEMS, *SUBMARINES, CONTROL, CONTROL PANELS, COSTS, DATA PROCESSING, DIGITAL SYSTEMS, GUIDED MISSILES, HUMAN FACTORS ENGINEERING, REDUCTION, SHIPBOARD, SUBMARINE PERSONNEL, UNDERWATER TO SURFACE(U)
IDENTIFIERS: SQUIRE, SUBIC (U)

AN INTEGRATED SHIP CONTROL CONSOLE IS DESCRIBED WHICH IS DESIGNED SO ONE MAN, UNDER NORMAL WATCHSTANDING CONDITIONS, CAN PERFORM EFFECTIVELY ALL NORMAL SHIP CONTROL OPERATIONS; STEERING AND DIVING, HOVERING SUBMERGING AND SURFACING, TRIM AND BALLAST CONTROL, MISSILE COMPENSATION, AND SPEED ORDERING CONTROL; AND SO, IN EMERGENCY SITUATIONS, AN ADDITIONAL MAN CAN PERFORM AT AN EMERGENCY HELMSMAN'S STATION. THREE MEN NOW PERFORM SHIP CONTROL OPERATIONS I NORMAL CONDITIONS, AND A FOURTH MAN IS REQUIRED DURING AN EMERGENCY SITUATION. THIS INTEGRATED SHIP CONTROL CONSOLE IS DESIGNED FOR FBM SUBMARINES AND IS ALSO GENERALLY COMPATIBLE WITH THE PRESENT REQUIREMENTS FOR ASW AND ATTACK SUBMARINES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-274 035
RAND CORP SANTA MONICA CALIF

HUMAN FACTORS IN AUTOMATIC CHECKOUT EQUIPMENT: AN ANNOTATED BIBLIOGRAPHY (U)

MAR 62 IV

UNCLASSIFIED REPORT

DESCRIPTORS: *AUTOMATION, *BIBLIOGRAPHIES, *HUMAN FACTORS ENGINEERING, *MAINTENANCE, ATTENTION, CHECKOUT EQUIPMENT, COMPUTERS, COSTS, ELECTRONIC EQUIPMENT, FLIGHT INSTRUMENTS, MAINTENANCE PERSONNEL, QUALITY CONTROL, TIME, TRAINING (U)

A SIMPLE FIVE-CATEGORY SYSTEM WAS USED IN ORGANIZING THE DOCUMENTS. THE FIVE SUBJECT AREAS ARE: (1) GENERAL PHILOSOPHY AND REVIEW OF AUTOMATIC CHECKOUT METHODS, (2) MAINTAINABILITY DIRECTIVES AND GUIDES, (3) MODELS OF THE MAINTENANCE PROCESS, (4) HUMAN PERFORMANCE OF CHECKOUT AND FAULT-ISOLATION TASKS, AND (5) SPECIFIC CHECKOUT SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-276 372
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

A LABORATORY MODEL FOR SYSTEMS RESEARCH: A TERMINAL AIR TRAFFIC CONTROL SYSTEM (U)

SEP 61 1V ALEXANDER L.T.,COOPERBAND,A.S.;
REPT. NO. TM639

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR TRAFFIC CONTROL SYSTEMS, AIR CONTROL CENTERS, COMPUTERS, DESIGN, HUMAN FACTORS ENGINEERING, OPERATIONS RESEARCH, SIMULATION, TEST METHODS (U)

THE TERMINAL AIR TRAFFIC CONTROL SYSTEM (TATCS) WAS DESIGNED AS A LABORATORY VEHICLE FOR STUDYING FUTURE REQUIREMENTS OF AIR CONTROL CENTERS AND THE RELATIONSHIP OF MEN AND MACHINES AND THEIR INTERACTIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-282 619
UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES ENGINEER WATERWAYS EXPERIMENT STATION.

HUMAN FACTORS RESEARCH IN ELECTRONICS MAINTENANCE: AN ANALYSIS OF RECENT TRENDS, WITH SOME SUGGESTIONS FOR THE FUTURE (U)

JUL 62 IV RIGNEY,JOSEPH W.;HOFFMAN,LYLE S.;
REPT. NO. TR35
CONTRACT: NONR22822

UNCLASSIFIED REPORT

DESCRIPTORS: *ELECTRONICS, *HUMAN FACTORS ENGINEERING, *MAINTENANCE PERSONNEL, AUTOMATION, HANDBOOKS, MAINTENANCE (U)

THE PRESENT STATUS OF HUMAN FACTORS RESEARCH AND DEVELOPMENT IN THE ELECTRONICS MAINTENANCE FIELD AND SOME NEEDED RESEARCH APPROACHES FOR THE FUTURE ARE ASSESSED. SELECTED LITERATURE PERTAINING TO MAINTENANCE WAS REVIEWED TO UNCOVER IMPORTANT TRENDS. SIX BROAD AREAS ARE IDENTIFIED, AND REPRESENTATIVE STUDIES IN EACH, ALONG WITH THEIR IMPLICATIONS, ARE DISCUSSED. (1) THE MEASUREMENT OF MAINTAINABILITY OF EQUIPMENT IN THE FIELD HAS BEEN ATTEMPTED FROM A TIME-ORIENTED AND A FEATURE-ORIENTED BASIS. PROCEDURES FOR PREDICTING THE MAINTAINABILITY OF FUTURE EQUIPMENT RELY ON SIMULATING FAILURE RATES AND REPAIR ACTIONS. (2) NUMEROUS MILITARY STANDARDS AND SPECIFICATIONS, AND HUMAN FACTORS HANDBOOKS TO GUIDE THE DESIGN OF EQUIPMENT FOR MAINTAINABILITY HAVE BEEN PRODUCED. (3) THE AUTOMATION OF MAINTENANCE TASKS, BY MEANS OF AUTOMATED TEST EQUIPMENT, HAS BEEN A MAJOR EFFORT IN THE DEVELOPMENT OF MOST LARGE EQUIPMENT SYSTEMS. (4) THERE HAVE BEEN RELATIVELY FEW STUDIES OF MAINTENANCE VARIABLES WHICH HAVE USED THE CLASSICAL EXPERIMENTAL METHOD. (5) MANY INVESTIGATIONS IN TRADITIONAL PERSONNEL AREAS HAVE BEEN CONDUCTED IN THE MAINTENANCE FIELD. (6) MATHEMATICAL MODELING TECHNIQUES ARE BEING USED TO SIMULATE HUMAN PROBLEM SOLVING AND OTHER COMPLEX BEHAVIORAL PROCESSES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-283 330
SMITH ELECTRONICS INC CLEVELAND OHIO

DESIGN AND USE OF MAN-MACHINE SYSTEMS (U)

NOV 59 1V MILLER,ROBERT B.;CHAPMAN,ROBERT L.;
CONTRACT: NONR-135408

UNCLASSIFIED REPORT

DESCRIPTORS: *MILITARY RESEARCH, *AUTOMATION, *HUMAN FACTORS ENGINEERING, *MILITARY RESEARCH, MILITARY BUDGETS, COMMUNICATION THEORY, COMPUTERS, DECISION MAKING, DEPARTMENT OF DEFENSE, DISPLAY SYSTEMS, DOCUMENTS, INFORMATION RETRIEVAL, LANGUAGE, MANAGEMENT ENGINEERING, PERSONNEL, RESEARCH MANAGEMENT, SIMULATION, WEAPONS (U)
IDENTIFIERS: SYSTEMS (U)

PROBLEMS IN BASIC RESEARCH THAT NEED TO BE SOLVED IN ORDER TO MAKE THE MOST EFFECTIVE USE OF MEN IN WEAPON SYSTEMS ARE DISCUSSED. DISCUSSION IS LIMITED TO TOPICS IN WHICH PRESENT RESEARCH SUPPORT APPEARS TO BE INADEQUATE TO MEET THE NEEDS OF THE DEPARTMENT OF DEFENSE IN THE TIME PERIOD 1965-70, AND TO THOSE TOPICS IN WHICH THE DEPARTMENT OF DEFENSE HAS A PECULIAR INTEREST BECAUSE OF ITS GENERALITY. BASIC SCIENTIFIC THEORY ON SYSTEMS CONSIDERED AS WHOLE IS INADEQUATE. SYSTEM SIMULATION TECHNIQUES ARE INADEQUATE. CURRENT TECHNIQUES FOR PERSONNEL OPERATIONS ARE INADEQUATE TO INSURE THAT NEW MAN-MACHINE SYSTEMS WILL BE EFFECTIVELY OPERATED, MAINTAINED AND SUPPORTED. A GENERALIZED MAN-TOMACHINE CONTROL LANGUAGE IS NEEDED. KNOWLEDGE OF DISPLAYS IS INADEQUATE BOTH IN TERMS OF WHAT INFORMATION TO DISPLA AND HOW BEST TO DISPLAY IT. METHODS OF INDEXING RESEARCH DATA AND INFORMATION FOR EFICIENT USE OF MECHANIZED STORAGE AND RETRIEVAL SYSTEMS ARE INADEQUATE. A FOCUS IS NEEDED FOR THE PRESENT WIDELY SCATTERED MANMACHINE SYSTEM RESEARCH ACTIVITIES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-283 487
ELECTRONIC SYSTEMS DIV L G HANSCOM FIELD MASS

A COMPARISON OF TWO LOGIC SYMBOL CODING TECHNIQUES IN A SIMULATED DIGITAL DEVICE MAINTENANCE ENVIRONMENT (U)

JUL 62 IV BAKER,JAMES D.;WHITEHURST,ALBERT J.;
REPT. NO. TDR62 196
MONITOR: ESD TDR62 196

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING, *DIGITAL COMPUTERS, *LANGUAGE, ANALYSIS OF VARIANCE, CIRCUITS, CODING, COMPUTER LOGIC, CONFIGURATION, DIGITAL SYSTEMS, HUMAN FACTORS ENGINEERING, MAINTENANCE, MATHEMATICAL LOGIC, TRAINING DEVICES, WIRING DIAGRAMS (U)

THIS STUDY WAS DESIGNED TO EVALUATE WHICH OF TWO TECHNIQUES IS BETTER FOR ENCODING THE LOGIC SYMBOLS IN DETAILED LOGIC DIAGRAMS TO CONVEY INFORMATION ABOUT DIGITAL CIRCUITS. ONE TECHNIQUE EMPLOYED SHAPE ENCODING TO DIFFERENTIATE BASIC LOGIC FUNCTIONS; THE OTHER USED ALPHABETIC IDENTIFIERS. THE FINDINGS SHOWED THAT USING SHAPE ENCODED SYMBOLS IN SIMULATED DETAILED LOGIC DIAGRAMS RESULTED IN A SIGNIFICANT REDUCTION IN THE TIME REQUIRED TO SOLVE MAINTENANCE TYPE PROBLEMS. IT IS CONCLUDED THAT SHAPE ENCODING IS THE BETTER OF THE TWO TECHNIQUES, FOR USE IN OPERATIONAL SITUATIONS, IF TIME-SAVING IS OF CONCERN. BASED UPON OBSERVATIONS MADE DURING THE DESIGN AND CONDUCT OF THIS STUDY, TWO SETS OF RECOMMENDATIONS ARE MADE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-283 971
MITRE CORP BEDFORD MASS

DISPLAY COLOR CODING FOR A VISUAL SEARCH TASK (U)

JUN 62 IV SMITH,SIDNEY L.;
REPT. NO. TSR7TDR62 214
CONTRACT: AF33 600 39852
MONITOR: ESD TDR62 214

UNCLASSIFIED REPORT

DESCRIPTORS: *CODING, *COLOR VISION, *DATA PROCESSING, *DISPLAY SYSTEMS, ANALYSIS, DATA, EXPERIMENTAL DATA, HUMAN FACTORS ENGINEERING, MACHINES, HUMANS, NUMBERS, TABLES(DATA) (U)

N NAL IS PR SENT D WHICH DESCRIBES THE RE. LTS OF AN EXPERIMENTAL STUDY OF THE EFFECTS OF DIS LAY COLOR CODING ON VISUAL SEARCH TIME. TWELVE SUB CTS EACH VIEWED A SERIES OF 300 DISPLAYS, WHICH VAR.ED IN DISPLAY DENSITY, IN NUMBER OF COLORS USED, IN THE PARTICULAR COLOR OF THE TARGET, WITH EITHER A WHI OR BLACK BACKGROU D, U D R CONDI IONS WHER THE SUB CT EITHER KNEW THE COLOR OF THE TARGET IN ADV NCE, OR DID NOT. NEITHER THE PARTICULAR COLOR OF E TARGET NOR THE DISPLAY BACKGROUND HAD ANY SIG. FICANT EFFECT ON SEARCH TIME. SEARCH TIME INC ASED REGULARLY WITH INCREASING DISPLAY DENSITY. FOR JLTICOLORED DISPLAYS, WHEN E COLOR OF THE TAR WAS KNOWN IN ADVANCE, SEARCH TIMES WERE CONS ERABLY SHORTER THAN WHEN THE TARGET COLOR WAS UNKN N. WHEN THE COLOR OF THE TARGET WAS UNKN N, SEARCH TIMES WERE NOT SIG IFICANTLY IFF RENT HAN THOSE FOR SINGLE-COLORED DISPLAYS. AUTH (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-285 218
ELECTRONICS AND ORDNANCE DIV AVCO CORP CINCINNATI OHIO

THE DATA FLOW ANALYSIS OF A MOBILE ATC AID (U)

AUG 62 1V BUSCH,ALLEN C.;MCNAIR,ROBERT J.; KIRBY,FREDERICK J.;
REPT. NO. TDR62 190AE 207 62 7
CONTRACT: AF19 628 244
MONITOR: ESD TDR62 190

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR TRAFFIC CONTROL SYSTEMS, *AIR TRAFFIC CONTROLLERS, ANALYSIS, COMMUNICATION SYSTEMS, COMPUTERS, DISPLAY SYSTEMS, EFFECTIVENESS, ELECTRONIC EQUIPMENT, FLIGHT PATHS, HUMAN FACTORS ENGINEERING, MATHEMATICAL ANALYSIS, OPERATIONS RESEARCH, SCHEDULING (U)
IDENTIFIERS: AN/TSW-5 (U)

AN ANALYSIS OF INTERNAL DATA FLOW OF AIR TRAFFIC CONTROL CENTRAL AN/TSW-5 (MODIFIED TO INCLUDE A FLIGHT PATH PREDICTION COMPUTER AND A TIME SCHEDULE DISPLAY UNIT) INDICATES THAT THE MODIFIED SEMIAUTOMATIC SHELTER OPERATIONS ARE IMPROVED IN THE FOLLOWING WAYS: IMPROVED CONTROLLER ABILITY TO EFFICIENTLY INTERLEAVE ARRIVING AND DEPARTING AIRCRAFT; IMPROVED CONTROLLER COGNIZANCE OF THE ENTIRE TRAFFIC SITUATION; IMPROVED OPERATIONAL EFFECTIVENESS UNDER JAMMING; AN ACCEPTANCE RATE IN EXCESS OF 50 AIRCRAFT PER HR BY THE AN/TSQ-47; ADDITIONAL TOOLS AND MEANS TO COMPENSATE FOR FAILURE OF RADAR OR OTHER NAVIGATIONAL AIDS ARE PROVIDED; CONTROLLERS BECOME PROFICIENT AT AN EARLIER TIME IN THE TRAINING EXPERIENCE CYCLE; AND THE DECISION MAKING TASK LOAD ON THE ENTIRE AN/TSW-5 CONTROL TEAM IS REDUCED. WITH COMPUTER PATH-PREDICTION AND SCHEDULING PROVIDED, THE COMMUNICATION CHANNEL LOAD FACTOR IS LESS THAN 70% AT ALL CONTROLLER POSITIONS WHEN HANDLING 50 APPROACHES PER HR. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-288 837
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

PROGRAMMED DECISIONS IN PROGRAMMED INSTRUCTION (U)

AUG 62 IV COULSON,JOHN E.;
REPT. NO. SP 933 001 00

UNCLASSIFIED REPORT

DESCRIPTORS: *AUTOMATION, *EDUCATION, *TEACHING MACHINES, DATA PROCESSING, DIGITAL COMPUTERS, HUMAN FACTORS ENGINEERING, LEARNING, PROGRAMMING (COMPUTERS), STUDENTS (U)

FLEXIBLE SEQUENCES KNOWN AS BRANCHING PROGRAMS ARE USED TO ADAPT TEACHING MATERIALS TO INDIVIDUALSTUDENTS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-292 144
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

EFFECT OF VARIATION OF THE DRIFT PARAMETER ON CONTROL OF A STOCHASTIC PROCESS (U)

AUG 62 1V PEARSON,WILLIAM H.;
REPT. NO. TDR62 72
PROJ: AF-7183
MONITOR: AMRL TDR-62-72

UNCLASSIFIED REPORT

DESCRIPTORS: *CONTROL SIMULATORS, *DIFFERENCE EQUATIONS, *HUMAN FACTORS ENGINEERING, COMPUTERS, PROBABILITY (U)

THIS RESEARCH EXAMINES MAN'S ABILITY TO CONTROL A SIMPLE PROCESS WHOSE SYSTEMATIC DRIFT IS OBSCURED BY RANDOM VARIATIONS. OF THE MANY COMBINATIONS OF SYSTEMATIC DRIFT AND RANDOM VARIATION POSSIBLE IN SUCH A PROCESS, FOUR WERE INVESTIGATED EXPERIMENTALLY. UNDER TWO OF THESE CONDITIONS THE PROCESS WOULD, IF UNCORRECTED, TEND TO DIVERGE FROM THE CONTROL LIMITS. UNDER THE OTHER TWO CONDITIONS THE PROCESS WOULD TEND TO REMAIN WITHIN OR RETURN TO THE CONTROL LIMITS. FOR THE TWO EXPLOSIVE CONDITIONS AN APPROPRIATE CONTROL STRATEGY WOULD BE TO CORRECT THE PROCESS BEFORE IT EXCEEDED THE CONTROL LIMITS. FOR THE TWO SELF-CONTROLLED CONDITIONS AN APPROPRIATE STRATEGY WOULD BE TO CORRECT INFREQUENTLY. SUBJECTS CORRECTED BEFORE CONTROL LIMITS WERE EXCEEDED MORE FREQUENTLY UNDER THE EXPLOSIVE CONDITIONS THAN UNDER THE SELF-CONTROLLED CONDITIONS. HOWEVER, UNDER THE SELF-CONTROLLED CONDITIONS THE SUBJECTS CORRECTED MORE FREQUENTLY THAN NECESSARY. THIS SUGGESTS THAT WHEN OPERATING A SELF-CONTROLLED PROCESS HUMANS DO NOT BEHAVE OPTIMALLY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-293 995
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

A DATA PROCESSING FORMALISM (U)

NOV 62 IV ARMENTI,A.W.;SCHAFER,B.J.;WINETT, J.M.;

REPT. NO. TR283TDR62 257
CONTRACT: AF19 604 7400
MONITOR: ESD TDR62 257

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING, *PROGRAMMING (COMPUTERS), COMPUTER LOGIC, CONTROL SYSTEMS, DESIGN, HUMAN FACTORS ENGINEERING, LANGUAGE, MACHINE TRANSLATION, SEQUENCES(MATHEMATICS) (U)

DEVELOPS A LANGUAGE SYSTEM FOR TRANSMITTING COMPUTER-PROCESSING IDEAS FROM ONE SYSTEMS DESIGNER TO ANOTHER.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-294 779
AIR FORCE BALLISTIC MISSILE DIV INGLEWOOD CALIF

HUMAN ENGINEERING DESIGN STANDARDS FOR MISSILE SYSTEM EQUIPMENT (U)

NOV 58 1V
REPT. NO. E 57 8 A

UNCLASSIFIED REPORT

DESCRIPTORS: *GUIDED MISSILES, *HUMAN FACTORS ENGINEERING, ANTHROPOMETRY, AUTOMATION, CATHODE RAY TUBES, CODING, COLORS, CONDUCTIVITY, CONTROL, CONTROL KNOBS, CONTROL PANELS, CONTROL SYSTEMS, DESIGN, DISPLAY SYSTEMS, GROUND SUPPORT EQUIPMENT, GUIDED MISSILE PERSONNEL, HAZARDS, HUMIDITY, ILLUMINATION, MARKERS, NOISE, PHYSICAL PROPERTIES, RELIABILITY, SAFETY DEVICES, SELECTION, STANDARDIZATION, SWITCHES, TABLES(DATA), TEMPERATURE, VIBRATION (U)
IDENTIFIERS: ELECTRIC CONDUCTORS, UNITIZATION, SWITCHES, FAIL SAFE DESIGN (U)

THIS EXHIBIT WAS PREPARED FOR DESIGN ENGINEERS. IT SETS FORTH DESIGN PRINCIPLES AND PRACTICES, BOTH GENERAL AND SPECIFIC, TO BE USED IN DESIGNING EQUIPMENT FOR MAXIMUM UTILIZATION BY GUIDED MISSILE OPERATOR AND MAINTENANCE PERSONNEL. IN ADDITION, THIS EXHIBIT IS AN ATTEMPT TO PROVIDE A BASIS FOR DESIGN STANDARDIZATION WITHIN AND AMONG SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-295 166
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

STUDIES IN THE ORGANIZATION OF MAN-MACHINE SYSTEMS (U)

DEC 62 1V
REPT. NO. 970
CONTRACT: AF49 638 355

UNCLASSIFIED REPORT

DESCRIPTORS: •COMPUTERS, •HUMAN FACTORS ENGINEERING, DESIGN, HUMANS, RESEARCH MANAGEMENT, SCIENTIFIC RESEA(U)

STUDIES IN THE ORGANIZATION OF MAN-MACHINE SYSTEMS.

DDC REPORT BIBLIOGRAPHY - SEARCH CONTROL NO. /ZHK13

AD-297 443
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

PROBLEMS ENCOUNTERED IN DEVELOPING AND MAINTAINING A FIELD SYSTEM TRAINING PROGRAM (U)

SEP 59 IV ALEXANDER,L.T.;IFORD,J.D.;
REPT. NO. SP 107

UNCLASSIFIED REPORT

DESCRIPTORS: *TRAINING, AIR CONTROL CENTERS, AIR DEFENSE COMMAND, AIR TRAFFIC CONTROLLERS, DATA PROCESSING, HUMAN FACTORS ENGINEERING, INFORMATION RETRIEVAL, MILITARY REQUIREMENTS, MOTIVATION, PERSONNEL, RADAR OPERATORS, SELECTION, SIMULATION, SYMPOSIA (U)

PROBLEMS ENCOUNTERED IN DEVELOPING AND MAINTAINING A FIELD SYSTEM TRAINING PROGRAM.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-400 617
UNITED AIRCRAFT CORP EAST HARTFORD CONN

CATEGORY I AND II TEST REPORT FOR RUNWAY VISUAL RANGE COMPUTING SETS. AN/FMN-1 (U)

FEB 63 1V
REPT. NO. WSC E 28
CONTRACT: AF19 626 16
MONITOR: ESD TDR63 120

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTERS, *RUNWAYS, DISPLAY SYSTEMS, HUMAN FACTORS ENGINEERING, LANDING AIDS, MAINTENANCE, METEOROLOGICAL INSTRUMENTS, NAVIGATIONAL AIDS, RANGE FINDING, RELIABILITY (ELECTRONICS), TESTS (U)

CATEGORY I AND II TESTS ON RUNWAY VISUAL RANGE COMPUTING SETS AN/FMN-1.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-402 145
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

A STUDY IN PROBABILISTIC INFORMATION PROCESSING (PIP) (U)

APR 63 1V KAPLAN,RICHARD J.;NEWMAN,J.ROBERT;
REPT. NO. TM1150 000 00
CONTRACT: AF19 628 1648

UNCLASSIFIED REPORT

DESCRIPTORS: •DECISION MAKING, •STATISTICAL ANALYSIS, COMPUTERS, DATA PROCESSING, GAME THEORY, HUMAN FACTORS ENGINEERING, PROBABILITY (U)

A STUDY IN PROBABILISTIC INFORMATION PROCESSING (PIP).

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-414 428
APPLIED PSYCHOLOGICAL SERVICES WAYNE PA

TECHNIQUES FOR EVALUATING OPERATOR LOADING IN MAN-MACHINE SYSTEMS. MODIFICATION AND FURTHER EVALUATION OF A DIGITAL MAN-MACHINE SIMULATION MODEL, (U)

JUL 63 59P WOLF,J. JAY ;SIEGEL,ARTHUR I. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•MATHEMATICAL MODELS, DESIGN), (•SIMULATION, REFUELING IN FLIGHT), (•COMPUTER, PROGRAMMING), (•DATA, ANALYSIS), HUMAN FACTORS ENGINEERING, INTERCEPTION, LAUNCHING, STRESS (PSYCHOLOGY), REACTION (PSYCHOLOGY), REFLEXES, NUMERICAL ANALYSIS, STOCHASTIC PROCESSES, STATISTICAL TESTS, TESTS, DIGITAL COMPUTERS (U)
IDENTIFIERS: F-6 AIRCRAFT, SPARROW, SPARROW III (U)

A DIGITAL COMPUTER SIMULATION MODEL WAS PREVIOUSLY DERIVED AND EMPLOYED FOR SIMULATING THE PERFORMANCE OF THE OPERATOR(S) IN A MAN-MACHINE SYSTEM. THE TECHNIQUE IS BASED ON AN ANALYSIS OF THE PERFORMANCE OF EACH OPERATOR, ARRANGED INTO ORDERED, DISCRETE ACTIONS CALLED 'SUBTASKS,' AND THE COMPILATION FOR EACH OF CERTAIN SOURCE DATA. THESE DATA, TOGETHER WITH SELECTED PARAMETER VALUES (E.G., THE TIME ALLOTTED FOR TASK PERFORMANCE), ARE PLACED IN PUNCHED CARD FORM AND INTRODUCED INTO A DIGITAL COMPUTER WHICH SEQUENTIALLY SIMULATES, ACCORDING TO THE RULES OF THE MODEL, THE 'PERFORMANCE' OF EACH SUBTASK BY EACH OPERATOR. THE NORMAL SEQUENCE OF SUBTASKS MAY BE MODIFIED IF ACTIONS HAVE TO BE SKIPPED OR REPEATED DUE TO FAILURE OF A SUBTASK BY EITHER OPERATOR OR AS A RESULT OF OPERATOR DECISIONS. A SIMULATION IS COMPLETED WHEN THE OPERATORS EITHER USE ALL ALLOTTED TIME OR SUCCESSFULLY COMPLETE THE TASK. RESULTS ARE RECORDED INDICATING THE AREAS OF OPERATOR OVERLOAD, FAILURE, IDLE TIME, PEAK STRESS, ETC., FOR THE GIVEN SET OF SELECTED PARAMETERS. REPETITIONS OF THE SIMULATION, WITH DIFFERENT PARAMETER VALUES, YIELD A RANGE OF RECORDS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-415 147
ELECTRONIC SYSTEMS DIV L G HANSCOM FIELD MASS

MONITORING OF SEQUENTIAL BINARY PATTERNS, (U)

MAY 63 3P JOHNSON,LAWRENCE ;POLLACK, IRWIN ;
MONITOR: ESD TDR63 342

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPRINT FROM PERCEPTUAL AND MOTOR SKILLS, 16, 911-913, 1963.

DESCRIPTORS: (*PERSONNEL, MONITORS), (*MONITORS, DISPLAY SYSTEMS), (*DISPLAY SYSTEMS, SIGNALS), DIGITAL SYSTEMS, PERFORMANCE(HUMAN), DATA PROCESSING, TESTS, SEQUENCES(MATHEMATICS), DIGITAL COMPUTERS, HUMAN FACTORS ENGINEERING (U)

REPRINT ON MONITORING OF SEQUENTIAL LINARY PATTERNS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-415 630
ILLINOIS UNIV URBANA

MONTE CARLO MODEL OF TRACKING BEHAVIOR, (U)

FEB 63 21P ADAMS,JACK A.;WEBER,CARL E.;

CONTRACT: AF49 638 371
MONITOR: AFOSR J878

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPRINT FROM HUMAN FACTORS THE JNL. OF THE HUMAN FACTORS SOCIETY, PP. 81-102, 1963.

DESCRIPTORS: (*TRACKING, SIMULATION), (*MONTE, TRACKING), (*PSYCHOLOGY, TRACKING), (*MATHEMATICAL MODELS, TRACKING), HUMAN FACTORS ENGINEERING, LEARNING, DIGITAL COMPUT, DATA PROCESSING SYSTEMS. (U)

MONTE CARLO MODEL FOR SIMULATION OF HUMAN TRACKING BEHAVIOR WITH A DIGITAL COMPUTER. REPRINT.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-417 680
FRANKLIN INST PHILADELPHIA PA LABS FOR RESEARCH AND DEVELOPMENT

INFORMATION DISPLAY IN THE AIR TRAFFIC CONTROL SYSTEM. A COORDINATED RESEARCH AND DEVELOPMENT APPROACH, (U)

MAR 62 IV BUCKLEY,EDWARD P.;GREEN, THOMAS H.;
CONTRACT: FAA BRD423

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ORIGINAL CONTAINS COLOR PLATES: ALL DDC REPRODUCTIONS WILL BE IN BLACK AND WHITE. ORIGINAL MAY BE SEEN IN DDC HQ.

DESCRIPTORS: (*AIR TRAFFIC CONTROL SYSTEMS, DISPLAY SYSTEMS), (*DISPLAY SYSTEMS, HUMAN), (*AIR TRAFFIC CONTROLLERS, DECISION MAKING), JOB ANALYSIS, AUTOMATION, COMMUNICATION THEORY, STATISTICAL ANALYSIS. (U)
IDENTIFIERS: CODES, MAN MACHINE FUNCTION (U)

THIS PAPER PRESENTS A PLAN OF ATTACK ON THE PROBLEM OF DISPLAYS FOR USE IN ADVANCED AIR TRAFFIC CONTROL SYSTEMS. THE METHOD, KNOWN AS CODE ('CONTROLLER DECISION EVALUATION'), CONSISTS OF THE EXPERIMENTAL COMPARISON OF DISPLAY INFORMATION AND FORMATS UNDER CONDITIONS OF SCOREABLE STATIC SIMULATIONS. THE EXPERIMENTAL DISPLAYS ARE SIMULATIONS OF RADAR SCOPES PROJECTED FROM FILM STRIPS FOR MULTIPLE VIEWING. INDEPENDENT VARIABLES ARE THE TYPE, AMOUNT, AND/OR LEVEL OF DETAIL OF INFORMATION PRESENTED TO THE CONTROLLER; DEPENDENT VARIABLES ARE SUCCESS IN PREDICTING CONFLICTIONS AND/OR DELAYS. THE TECHNIQUE MAKES IT POSSIBLE TO ASSESS THE EFFECTIVENESS OF ATC SYSTEMS WHICH AS YET ARE ONLY VISUALIZED, AS WELL AS OF SYSTEMS NOW BEING DEVELOPED OR IN ACTUAL OPERATION. TWO EXPERIMENTS ARE REPORTED UTILIZING THE METHOD. AN EXPERIMENTAL PROGRAM IS PRESENTED TO STUDY THE EFFECTS OF PROGRESSIVELY ADVANCED DEGREES OF AUTOMATED INFORMATION PROCESSING UPON CONTROLLER DECISION-MAKA MATRIX IS PRESENTED SHOWING THE STEPS TO BE TAKEN FOR THE ORDERLY DEVELOPMENT OF A FULLY AUTOMATED SYSTEM. THE CODE EXPERIMENTS TO BE PERFORMED PRIOR TO THE DEVELOPMENT OF EACH LEVEL OF AUTOMATION, AS INDICATED IN THE MATRIX, ARE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-419 018
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

A METHODOLOGICAL APPROACH TO THE ANALYSIS AND AUTOMATIC HANDLING OF TASK INFORMATION FOR SYSTEMS IN THE CONCEPTUAL PHASE, (U)

AUG 63 120P REED,LAWRENCE E.;FOLEY, JOHN B.;GRAHAM,RALPH S.;HILGEMAN,JONATHAN B.;

PROJ: 1710
TASK: 171006
MONITOR: AMRL TDR63 78

UNCLASSIFIED REPORT

DESCRIPTORS: (•JOB ANALYSIS, SCIENTIFIC RE), DATA PROCESSING, HUMAN ENGI, BEHAVIOR, CODING, TRAININGRSONNEL, INFORMATION RETRIEVAL. (U)
IDENTIFIERS: HUMAN FACTORS ENGINEERING (U)

ADEQUATE CONSIDERATION OF THE HUMAN SKILLS REQUIRED BY FUTURE SYSTEMS HAS LONG BEEN NEGLECTED IN THE CONCEPTUAL PHASE OF MAN-MACHINE SYSTEM DEVELOPMENT. THIS NEGLECT IN PART HAS BEEN DUE TO LACK OF A UNIFORM AND WORKABLE METHOD FOR GATHERING, PROCESSING, AND USING EARLY HUMAN FACTORS INFORMATION FOR IMPROVING THE DESIGN AND DEVELOPMENT OF SYSTEMS. THE METHODOLOGICAL APPROACH PRESENTED IN THIS REPORT WAS PREDICATED ON THIS NEED. THIS REPORT PRESENTS A TECHNIQUE FOR ANALYZING AND PROCESSING TASK AND TASK REQUIREMENTS DATA GENERATED DURING THE CONCEPTUAL PHASE OF SYSTEM DEVELOPMENT. THE TECHNIQUE INCLUDES: (A) A CATEGORY SYSTEM FOR ORGANIZING, CLASSIFYING, AND CODING TASK INFORMATION; (B) A TASK ANALYSIS FORMAT FOR RECORDING AND CODING TASK DESCRIPTIONS AND TASK REQUIREMENTS; AND (C) COMPUTER UPDATE AND RETRIEVAL PROGRAMS. TASK REQUIREMENT DATA APPEARING IN DOCUMENTS RESULTING FROM THE AIR FORCE STUDY REQUIREMENT PROGRAM ARE ANALYZED AND USED FOR TESTING THE TECHNIQUE ON AN ACTUAL PERSONNEL TRAINING PROBLEM. THE TEST PROGRAM INDICATES THAT THE TECHNIQUE CAN BE USED TO ASSIST HUMAN FACTORS SPECIALISTS TO ISOLATE AND PROCESS TASK AND TASK REQUIREMENTS ASSOCIATED WITH ADVANCED SYSTEMS FOR MAKING PERSONNEL, TRAINING, AND TRAINING EQUIPMENT RECOMMENDATIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-419 254
BENDIX CORP ANN ARBOR MICH BENDIX SYSTEMS DIV

STUDY OF COMPUTER MANUAL INPUT DEVICES, (U)

SEP 63 1V POLLOCK,WILLIAM T.;GILDNER, GILBERT G.;
REPT. NO. BSC40138
CONTRACT: AF19 628 435
PROJ: 9678
TASK: 967801
MONITOR: ESD TDR63 545

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERS, ENGINEERING), MAC S, HUMAN FACTORS ENGINEERING, COMMUNICATION, PERFORMANCE(HUMAN), ERRORS, BIBLIOG. DATA, ELECTRIC SWITCHES, SPEECH (U)

A STUDY OF COMPUTER MANUAL INPUT DEVICES AND THEIR ASSOCIATED HUMAN ENGINEERING CHARACTER ISTICS WAS CONDUCTED FOR THE PURPOSE OF DEVELOP ING A SCHEME FOR RELATING THESE DEVICES TO OPERATOR PERFORMANCE CHARACTERISTICS, COMPUTER CHARACTERISTICS AND SYSTEM REQUIREMENTS. CON VENTIONAL COMMERCIALLY AVAILABLE INPUT DEVICES SUCH AS PUSHBUTTONS, TOGGLE SWITCHES, JOYSTICKS, ETC. WERE SURVEYED. AVAILABLE LITERATURE PER TAINING TO HUMAN PERFORMANCE WITH SUCH DEVICES WAS REVIEWED AND SUMMARIZED. THE SUITABILITY OF DEVICES AND AVAILABILITY OF APPLICABLE PERFORM ANCE DATA ARE RELATED TO A GENERALIZED OPERATOR TASK FAMILY BY A SET OF TABLES. RESULTS OF THE STUDY SHOW A WIDE VARIETY OF AVAILABLE DEVICES, INADEQUATE RESEARCH DATA ESTABLISHING PERFORM ANCE FOR VARIOUS DEVICES AND DEVICE CHARACTER ISTICS, AND INCOMPLETE SPECIFICATION OF OPERATOR INPUT TASKS IN EXISTING SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-419 553
IBM WATSON RESEARCH CENTER YORKTOWN HEIGHTS N Y

APPLIED RESEARCH PROGRAM AEROSPACE INTELLIGENCE DATA SYSTEM (AIDS). VOLUME II - CONSOLES. (U)

DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 4.
SEP 62 28P
CONTRACT: AF19 626 10

UNCLASSIFIED REPORT

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

SOME GENERAL CHARACTERISTICS OF CONSOLES WHEN USED AS TRANSDUCERS BETWEEN HUMAN BEINGS AND IN FORMATION PROCESSING DEVICES ARE REVIEWED. TEST OF A SPECIFIC CONSOLE DESIGNED FOR INDEPENDENT **OFF LINE** USE, THE DATACOM MODEL 908-2 IS DESCRIBED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-419 778
ARMY RESEARCH OFFICE WASHINGTON D C

EIGHTH ANNUAL ARMY HUMAN FACTORS ENGINEERING CONFERENCE 16-19 OCTOBER 1962, UNITED STATES ARMY INFANTRY CENTER AND UNITED STATES ARMY INFANTRY SCHOOL, FORT BENNING, GEORGIA. (U)

NOV 62 335P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•HUMAN FACTORS ENGINEERING, SYMPOSIA), (•SYMPOSIA, HUMAN FACTORS ENGINEERING), ARMY RESEARCH, CAMOUFLAGE, AUTOMATIC WEAPONS, CHEMICAL WARFARE AGENTS, PROTECTIVE CLOTHING, COMPUTERS, ACOUSTICS, REVIEWS, ARMY EQUIPMENT (U)
IDENTIFIERS: BZ AGENTS (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-420 577
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

DEFINING LEVEL-OF-AUTOMATION FOR CHECKOUT EQUIPMENT. A SCALING APPROACH, (U)

AUG 63 17P TOPMILLER,DONALD A. ;
PROJ: AF7184
TASK: 718406
MONITOR: *MRL TDR63 76

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON HUMAN PERFORMANCE IN ADVANCED SYSTEMS.

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, AUTOMATION), (*ENGINEERS, PERFORMANCE(HUMAN)), (*PERCEPTION, PERSONNEL), TEST EQUIPMENT, SOCIAL COMMUNICATION (U)

IN AN ATTEMPT TO DETERMINE IF DIFFERENT PROFESSIONAL GROUPS USE DIFFERING SUBJECTIVE SCALES FOR DEFINING ''LEVEL OF AUTOMATION'' OF CHECKOUT EQUIPMENT, 19 ENGINEERING PSYCHOLOGISTS AND 19 DESIGN ENGINEERS WERE ADMINISTERED A PAIREDCOMPARISONS JUDGMENT TASK CONSISTING OF CARDS CONTAINING PHASES INDICATING VARIOUS LEVELS OF MAN-MACHINE AUTOMATION. THE RESULTING SCALED RESPONSES FOR BOTH GROUPS CONTAINED RANK-ORDER INVERSIONS OF AN ORIGINAL INTUITIVELY DEVELOPED SCALE. INTERVALS BETWEEN SCALE POINTS ALSO DIFFERED BETWEEN THE GROUPS. AS A RESULT OF THESE FINDINGS, IF AIR FORCE REQUIREMENTS ARE SPECIFIED FOR AUTOMATION LEVEL OF CHECKOUT EQUIPMENT IN WEAPON SYSTEMS DEVELOPMENT PROGRAMS, THE TYPE OF RATERS INVOLVED AND THE ASSOCIACED POTENTIAL PROBLEMS OF INTERDISCIPLINARY COMMUNICATIONS BETWEEN PROFESSIONS SHOULD BE CONSIDERED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-422 432
ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N Y

PROCEEDINGS OF SYMPOSIUM ON HUMAN FACTOR ASPECTS OF PHOTO INTERPRETATION. (U)

SEP 63 138P
PROJ: 4244
MONITOR: RADC TDR63 324

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SYMPOSIA, PHOTO INTERPRETATION), (*PHOTO INTERPRETATION, SYMPOSIA), (*HUMAN FACTORS ENGINEERING, PHOTO INTERPRETATION), TRAINING, AUTOMATION, PHOTOGRAPHIC IMAGES, QUALITY CONTROL, AERIAL PHOTOGRAPHY, RESOLUTION (U)
IDENTIFIERS: HUMAN FACTORS ENGINEERING (U)

CONTENTS: THE AUTOMATION OF PHOTO INTERPRETER FUNCTIONS; HUMAN FACTOR PROBLEMS: OBJECTIVES AND APPROACHES; MEASUREMENT AND EVALUATION OF GROUND RESOLUTION; QUALITY CATEGORIZATION OF AERIAL PHOTOGRAPHY; PSYCHOPHYSICAL ASPECTS OF IMAGE QUALITY; A STUDY OF IMAGE QUALITIES AND SPEEDED INTRINSIC TARGET RECOGNITION; FACTORS AFFECTING CHANGE DISCRIMINATION, RESEARCH ON THE RELATIONSHIP BETWEEN TIM AND PI PERFORMANCE; APPLICATION OF RAPID PRESENTATION TECHNIQUES IN PHOTO INTERPRETATION; PHOTO INTERPRETATION COURSES TAUGHT AT SHEPPARD AFB, TEXAS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-422 676
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

SCHEMATIC SIMULATION: A TECHNIQUE FOR THE DESIGN AND DEVELOPMENT OF A COMPLEX SYSTEM, (U)

SEP 63 11P ALEXANDER,L. T. ;
REPT. NO. SR TM639 005 00

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*AIR TRAFFIC CONTROL SYSTEMS, TERMINAL FLIGHT FACILITIES), (*OPERATIONS RESEARCH, AIR TRAFFIC CONTROL SYSTEMS), RESEARCH MANAGEMENT, COMMUNICATION SYSTEMS, DATA PROCESSING, SIMULATION, TEST METHODS, CIVIL AVIATION, HUMAN FACTORS ENGINEERING (U)

SCHEMATIC SIMULATION IS THE NAME OF A METHOD FOR STUDYING SYSTEM SPECIFICATIONS AND EXPLICATING IMPLICATIONS OF THE SPECIFICATIONS FOR SUBSYSTEM DESIGN. THE METHOD WAS DEVELOPED IN RESPONSE TO THE EXPRESSED NEED OF THE DESIGNERS OF THE TERMINAL AIR TRAFFIC CONTROL (TATC) LABORATORY SYSTEM. THE METHOD PROVIDES A MODEL OF THE PROJECTED SYSTEM AND A PROCEDURE BY WHICH THE DESIGNERS CAN VIEW SYSTEM OPERATIONS FROM THE STANDPOINT OF THE EVENTUAL OPERATORS. AN ILLUSTRATION IS GIVEN OF HOW SCHEMATIC SIMULATION WAS USED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-422 852
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

TERMINAL AIR TRAFFIC CONTROL FOLLOW-ON RESEARCH, (U)

SEP 63 10P ALEXANDER,L. T. ;
REPT. NO. TM639 007 00

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*AIR TRAFFIC CONTROL SYSTEMS, OPERATIONS RESEARCH), RESEARCH MANAGEMENT, TERMINAL FLIGHT FACILITIES, MODEL (SIMULATIONS), MODEL TESTS, DATA PROCESSING, DIGITAL COMPUTERS, SCHEDULING, AUTOMATION, TEST METHODS, HUMAN FACTORS ENGINEERING (U)

A PLAN IS PRESENTED FOR INVESTIGATION MAN-COMPUTER INFORMATION EXCHANGE PROBLEMS WITHIN THE CONTEXT OF THE SCHEDULING FUNCTION IN TERMINAL AIR TRAFFIC CONTROL THE PLANNED RESEARCH IS DIVIDED INTO TWO STAGES. THE FIRST CONSISTS OF PARALLEL INVESTIGATIONS OF HUMAN SCHEDULING BEHAVIOR AND THE DEVELOPMENT OF COMPUTER PROGRAMS TO AUTOMATE THE PROCESS. THE SECOND STAGE AIMS AT DESIGNING A SCHEDULING SYSTEM WHICH INCORPORATES DYNAMIC INTERACTION IN REAL TIME BETWEEN THE COMPUTER PROGRAMS AND HUMAN OPERATORS. THE PROGRAMS REQUIRED TO AUTOMATE THE SCHEDULING FUNCTION ARE DESCRIBED AND EXPERIMENTAL STUDIES OF HUMAN CONFLICT DETECTION AND CONFLICT RESOLUTION BEHAVIOR ARE SUGGESTED. A MORE GENERAL STATEMENT OF HUMAN SCHEDULING BEHAVIOR IS PRESENTED TOGETHER WITH AN APPROACH WHICH UTILIZES AN ABSTRACTED ENVIRONMENT AND TASK RATHER THAN THE AIR TRAFFIC CONTROL CONTEXT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-422 853
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

TEST RESULTS OF THE TERMINAL AIR TRAFFIC CONTROL LABORATORY SYSTEM, (U)

SEP 63 27P COOPERBAND,A. S. ;ALEXANDER, L. T. ;SCHMITZ,H. S. ;
REPT. NO. TM639 040 00

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*AIR TRAFFIC CONTROL SYSTEMS, OPERATIONS RESEARCH), SCHEDULING, MODELS (SIMULATIONS), DATA PROCESSING, DIGITAL COMPUTERS, MODEL TESTS, TEST METHODS, TABLES(DATA), RESEARCH MANAGEMENT, TERMINAL FLIGHT FACILITIES, HUMAN FACTORS ENGINEERING (U)

THE TERMINAL AIR TRAFFIC CONTROL (TATC) PROJECT REPRESENTS AN ATTEMPT TO PRODUCE IN THE LABORATORY THE PHENOMENA WHICH OCCUR IN MAN-MACHINE, INFORMATION-PROCESSING SYSTEMS. THE ESSENTIAL ASPECT OF THE PROCEDURE IS TO CREATE THE COMPLEX ENVIRONMENT WITHIN WHICH SUCH SYSTEMS OPERATE, TO MANIPULATE THIS ENVIRONMENT, AND TO OBSERVE HOW THE SYSTEM RESPONDS IN AN EFFORT TO ACHIEVE ITS MISSION. THE INSTRUMENT WHICH MAKES THIS TECHNIQUE POSSIBLE IS THE HIGH-SPEED DIGITAL COMPUTER, FOR ONLY THROUGH ITS USE CAN THESE COMPLEX ENVIRONMENTS BE SIMULATED, MANIPULATED, AND CONTROLLED. THE RESULTS OF THE EXPERIENCE WITH TATC INDICATE THAT SIGNIFICANT SYSTEM PHENOMENA CAN BE STUDIED IN THE LABORATORY THEREBY CONTRIBUTING TO THE DEVELOPMENT OF A SCIENCE OF SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-424 284
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

THE SYSTEM SYSTEM AND BRIDGES OVER THE GULF BETWEEN MAN-MACHINE-SYSTEM RESEARCH AND MAN-MACHINE-SYSTEM DEVELOPMENT, (U)

JAN 62 30P LICKLIDER,J. C. R. ;
CONTRACT: AF49 638 355
MONITOR: AFOSR 1673

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•OPERATIONS RESEARCH, COMPUTERS), (•HUMAN FACTORS ENGINEERING, DESIGN), COMPUTERS, SCIENTIFIC RESEARCH, COMMUNICATION THEORY, MODELS (SIMULATIONS), OPERATION, MATHEMATICAL MODELS (U)
IDENTIFIERS: MIDAS, PERT, SAGE, SYSTEMS ANALYSIS, TIROS (U)

THE NEED FOR GREATER COHERENCE IN THE MANMACHINE AND OTHER HIGH-ORDER INTERACTIONS OF OUR MAJOR SYSTEMS IS DESCRIBED, AND AN APPROACH TO ACHIEVEMENT OF THAT COHERENCE IS PROPOSED. THE APPROACH INVOLVES A COMPUTER-CENTERED META-SYSTEM (THE 'SYSTEM SYSTEM') DESIGNED TO FACILITATE COMMUNICATION, COORDINATION, AND PROBLEM-SOLVING. THE NEEDS FOR, AND ROLES OF, SUCH A META-SYSTEM IN VARIOUS PHASES OF SYSTEM DESIGN, DEVELOPMENT, PRODUCTION, AND OPERATION ARE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-424 905
MITRE CORP BEDFORD MASS

MAN-COMPUTER INFORMATION TRANSFER, (U)

63 6P SMITH,SIDNEY L. ;
CONTRACT: AF19 628 39852
MONITOR: ESD TDR63 498

UNCLASSIFIED REPORT
REPRINT FROM ELECTRO-TECHNOLOGY, AUG 63.
(COPIESNOT SUPPLIED BY DDC)
SUPPLEMENTARY NOTE: NO FOREIGN.

DESCRIPTORS: (*DATA PROCESSING, HUMAN ENGINEEING), COMPUTERS, DESIGN, DISPLAY SYSTEMS, LANGUAGE, CODING (U)
IDENTIFIERS: INFORMATION PROCESSING (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-428 839
MITRE CORP BEDFORD MASS

FIRST CONGRESS ON THE INFORMATION SYSTEM SCIENCES SESSION 15 INFORMATION SYSTEM PERFORMANCE EVALUATION. (U)

JAN 64 59P
REPT. NO. SS15
CONTRACT: AF33 600 39852
PROJ: 7040
MONITOR: ESD TDR63 474 15

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SYMPOSIA, INFORMATION RETRIEVAL), (*DATA PROCESSING, OPERATION), EFFECTIVENESS, TRAINING, DESIGN, DECISION MAKING, SIMULATION, ANALYSIS, PERSONNEL, CONTROL, PERFORMANCE(HUMAN), VISIBILITY, OPERATOR (PERSONNEL), HUMAN FACTORS ENGINEERING, JOB ANALYSIS (U)
IDENTIFIERS: INFORMATION SCIENCES, INFORMATION SYSTEMS, SAGE, SYSTEMS (U)

THIS SESSION DEALS WITH THE PROBLEMS OF EVALUATING THE PERFORMANCE OF A MILITARY INFORMATION PROCESSING SYSTEM BETWEEN THE TIME IT IS DEVISED AND THE TIME WHEN IT IS OBSOLETED. THE SESSION IS TRIPARTITE, DEALING WITH (1) THE CRITERIA INVOLVED IN JUDGING PERFORMANCE EFFECTIVENESS OF SYSTEMS, (2) THE USE OF THE ADCS TRAINING PROGRAM IN SYSTEM PERFORMANCE EVALUATION, AND (3) THE APPLICATION OF NORMATIVE EXERCISING AS A SYSTEM DESIGN AID. IN CONSIDERING THE PROBLEM OF ESTABLISHING CRITERIA BY WHICH TO EVALUATE SYSTEMS, THE THREE VARIABLES (ENVIRONMENTAL CONDITIONS, THE STATE OF THE SYSTEM, AND A KNOWLEDGE OF THE PROBABLE CONSEQUENCES OF ALTERNATIVE ACTION) WHICH IMPORTANTLY INFLUENCE PERFORMANCE ARE DESCRIBED. THE EFFICACY OF NORMATIVE EXERCISING AS AN ANALYTICAL AID OF DESIGN PURPOSES IN THE EARLY STAGES OF A PARTICULAR SYSTEM'S EVALUATION IS INDICATED, PARTICULARLY WHEN CRITERIA ARE LACKING WITH WHICH TO TEST OUTCOMES OF SYSTEM FUNCTION, WHEN THERE ARE MANY CONFLICTING VIEWS AS TO HOW TO ARRIVE AT A PROBLEM SOLUTION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-429 897
RAND CORP SANTA MONICA CALIF

ON THE EXPLOSION OF AUTOMATION, (U)

FEB 64 5P BELLMAN,RICHARD ;
REPT. NO. P2865

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, AUTOMATION), (*AUTOMATION, PUBLIC OPINION), (*COMPUTERS, SOCIAL SCIENCE), DECISION MAKING, DESIGN, DIGITAL COMPUTERS (U)

REVIEW OF EXPLOSION OF AUTOMATION. IMPROVEMENTS IN COMPUTERS. IMPACT OF AUTOMATION ON EMPLOYEES.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-430 035
DUNLAP AND ASSOCIATES INC DARIEN CONN

MAN-COMPUTER SYSTEMS AND ALLOCATION OF RESOURCES PROBLEMS. (U)

DESCRIPTIVE NOTE: PROGRESS REPT. NO. 3, JAN 64 72P GAGLIARDI,U. O. ;KAPLAN,IRA ;VALLERIE,L. L. ;
CONTRACT: NONR3602 00
TASK: NONR360300

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*BEHAVIOR, DECISION MAKING), (*HUMAN FACTORS ENGINEERING, WEAPON SYSTEMS), (*JOB ANALYSIS, LINEAR PROGRAMMING), AUTOMATION, MOBILE, MANNED, COMPUTERS, EYE, MOTION, AUTOMATIC, TARGETS, MAPPING, DETECTION, PERFORMMANCE TESTS, CAMERAS, TARGET RECOGNITION, DIGITAL COMPUTERS, TARGET DISCRIMINATION, DATA PROCESSING, SUBMARINES (U)
IDENTIFIERS: HEURISTIC PROGRAM, POLARIS, SYMBIOSIS (U)

THE WORK REPORTED CONCERNS THE OBSERVATION OF PROBLEM-SOLVING BEHAVIOR EXHIBITED BY SUBJECTS WHO WERE GIVEN AN ALLOCATION-OF-RESOURCES TASK. THE TASK WAS TO DEPLOY POLARIS-LIKE WEAPON SYSTEMS AGAINST A GIVEN TARGET SYSTEM UNDER STATED CONSTRAINTS. WHILE THE TASK IS FORMULABLE AS AN INTEGER LINEAR PROGRAMMING PROBLEM, THE SUBJECTS SOLVED IT BY RESORTING TO HEURISTIC PROCEDURES. THESE PROCEDURES, AS WELL AS THE SOLUTIONS PRODUCED, SEEM TO INDICATE THAT A PROBLEM SOLVER MAY ENCOUNTER CONSIDERABLE DIFFICULTY IN UNCOVERING THE ORDERING OF DECISION ALTERNATIVES, IF THIS ORDERING IS A PARTIAL ONE. FOLLOWING THE STUDY OF UNAIDED PERFORMANCE, TWO DISTINCT COMPUTER-AID CONCEPTS WERE DEVELOPED AND TESTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-431 611
PHILCO NEWPORT BEACH CALIF AERONUTRONIC DIV

HUMAN FACTORS ASPECTS OF RELIABILITY. (U)

DESCRIPTIVE NOTE: FINAL REPT., 1 JULY 62-30 SEP 63,
JAN 64 205P MILLER,GILBERT E. ;MAXWELL,
RICHARD A. ;FERGUSON,LINDA ;GALBO,CHARLES J.
;
REPT. NO. U2296
CONTRACT: DA36 039SC90877
PROJ: 3A95 20 001

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, RELIABILITY), WEAPON SYSTEMS, PERCEPTION, VISUAL ACUITY, STRESSES, MATHEMATICAL MODELS, SAMPLING, SIMULATION, PERFORMANCE(HUMAN), DIGITAL COMPUTERS, COMPUTERS, PROGRAMMING (COMPUTERS), PUNCHED CARDS, INPUT OUTPUT DEVICES (U)
IDENTIFIERS: TASK EQUIPMENT ANALYSIS (U)

THIS DOCUMENT PRESENTS THE FINAL REPORT OF THE HUMAN FACTORS ASPECTS OF RELIABILITY PROGRAM OF RESEARCH. THE REPORT CONTAINS A REVIEW OF THE LITERATURE RELATED TO THIS PROJECT, A REVIEW OF THE BASIC METHODOLOGY DEVELOPED FOR PREDICTING MAN-MACHINE SYSTEM RELIABILITY, A REPORT OF THE RESULTS OF THE APPLICATION OF THE METHODOLOGY IN SIGNAL CORPS R+D PROGRAMS, AND THE RELATIONSHIP OF THE STUDY TO PRESENT SIGNAL CORPS HUMAN FACTORS AND RELIABILITY TECHNICAL REQUIREMENTS. THE PROCEDURES FOR GENERATING TASK EQUIPMENT ANALYSIS (TEA) DATA AND THE MEANS OF TRANSLATING THESE DATA TO INPUT DATA FOR THE PREDICTIVE MODEL ARE PRESENTED. THE MANNER IN WHICH THE TEA DATA WERE CONVERTED TO INPUT DATA IS PRESENTED IN THE APPENDIX. ALTERNATIVE APPROACHES INVESTIGATED DURING THE COURSE OF THIS STUDY ARE DISCUSSED. THE METHODOLOGICAL APPROACH AND THE MATHEMATICS UTILIZED IN DERIVING THE PREDICTIVE MODEL AND THE PROGRAM FOR FORMULATION ARE PRESENTED IN DETAIL IN THE REPORT. THE MANNER IN WHICH THE PROGRAM OUTPUT SUMMARIES AND THE DETAILED PROGRAM LISTINGS OF SIMULATION RUNS CAN BE UTILIZED ARE ALSO DISCUSSED AND DESCRIBED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-432 028
DUNLAP AND ASSOCIATES INC DARIEN CONN

HUMAN FACTORS TECHNOLOGY IN THE DESIGN OF SIMULATORS FOR OPERATOR TRAINING, (U)

DEC 63 196P SMODE,ALFRED F. ;GRUBER, ALIN ;
CONTRACT: N61339-1103
MONITOR: NAVTRADEVCEN 1103-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, TRAINING DEVICES), (*FLIGHT SIMULATORS, DESIGN), (*TRAINING, OPERATORS (PERSONNEL)), (*TRAINING DEVICES, WEAPON SYSTEMS), SIMULATION, PERFORMANCE(HUMAN), MEASUREMENT, JOB ANALYSIS, STANDARDS, SPECIFICATIONS, TESTS, EFFECTIVENESS, LEARNING, TABLES(DATA), TEST METHODS, VISION, PERCEPTION, ENVIRONMENTAL TESTS, DISPLAY, BEHAVIOR, COMPUTERS (U)

THIS REPORT PRESENTS AN ORGANIZED BODY OF INFORMATION USEFUL FOR DEALING WITH THOSE HUMAN FACTORS PROBLEMS FREQUENTLY ENCOUNTERED IN THE DEVELOPMENT OF THE WEAPONS SYSTEM TRAINER. EMPHASIS IS GIVEN THROUGHOUT TO THE GENERAL PROBLEMS INVOLVED IN DEVELOPING THE COMPLETE TRAINING SYSTEM RATHER THAN TO THE ANALYSIS OF DETAILS SPECIFIC TO GIVEN TRAINING SYSTEMS. IT SUMMARIZES BASIC HUMAN FACTORS INFORMATION WHICH INFLUENCES THE DESIGN AND CONSTRUCTION OF TRAINING DEVICES. SUCCESSIVE CHAPTERS OF THE REPORT ARE DEVOTED TO DETERMINING TRAINING NEEDS, DEVELOPING THE ENVIRONMENT FOR LEARNING, UNDERSTANDING SIMULATION REQUIREMENTS FOR TRAINING, DEVELOPING A MEASUREMENT CAPABILITY, AND DISCUSSING THE HUMAN ENGINEERING PROBLEMS IN TRAINER DESIGN. AS IT PROVIDES A CONSIDERABLE BACKGROUND OF HUMAN FACTORS INFORMATION PERTINENT TO THE SYNTHETIC GROUND ENVIRONMENT, THIS REPORT WILL BE OF INTEREST TO INDIVIDUALS DIRECTLY CONCERNED WITH WEAPONS SYSTEM TRAINING PROGRAMS, PREPARING TRAINER SPECIFICATIONS, DEVELOPING TRAINING STANDARDS, AND TESTING AND EVALUATING SIMULATION EQUIPMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-432 826
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

CONTROL OF A DISCRETE STOCHASTIC PROCESS AS A FUNCTION OF THE COSTS FOR MAKING CORRECTIVE ACTIONS. (U)

DESCRIPTIVE NOTE: REPT. FOR DEC 61-FEB 62,
DEC 63 17P HORNSETH,JOHN P. ;HUEBNER, WALTER J. ;PEARSON,WILLIAM H. ;
PROJ: 7184
TASK: 718403
MONITOR: AMRL TDR63 111

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON HUMAN PERFORMANCE IN ADVANCED SYSTEMS.

DESCRIPTORS: (*STOCHASTIC PROCESS, HUMAN FACTORS ENGINEERING), PERFORMANCE(HUMAN), COSTS, CONTROL, DESIGN, TOLERANCES (PHYSIOLOGY), ERRORS, AUTOMATION, MODELS (SIMULATIONS), PROBABILITY, ANALYSIS OF VARIANCE (U)

THIS RESEARCH EXAMINES MAN'S ABILITY TO CONTROL A DISCRETE STOCHASTIC PROCESS. THE COST (C1) FOR CORRECTING THE PROCESS BEFORE IT EXCEEDED AN ARBITRARY TOLERANCE LIMIT SERVED AS THE EXPERIMENCAL VARIABLE. THE COST (C2) FOR CORRECTING THIS PROCESS AFTER IT EXCEEDED THE TOLERANCE LIMIT WAS FIXED. FOR LOW C1 COSTS THE HUMAN CONTROLLER ACHIEVED OPTIMUM CONTROL (I.E., MINIMIZED CONTROL COST) WITHIN FOUR 100-CYCLE TRIALS. FOR HIGH C1 COSTS THE HUMAN CONTROLLER ACHIEVED A LEVEL OF CONTROL EQUIVALENT TO THAT OF THE OPTIMUM CONTROLLER ON THE FIRST 100-CYCLE TRIAL. AN ADDITIONAL REQUIREMENT TO SERVE AS A STATISTICAL SENSOR WAS IMPOSED IN CONTROLLING THE PROCESS UNDER LOW C1 COST CONDITIONS. THE HUMAN CONTROLLER'S RESPONSE TO THIS REQUIREMENT WAS APPROPRIATE. THE IMPLICATIONS OF THESE RESULTS TO THE DESIGN OF DISCRETE STOCHASTIC PROCESS CONTROLLERS IS DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-435 022
CORNELL AERONAUTICAL LAB INC BUFFALO N Y

HUMAN TRACKING ABILITY FOR MAXIMUM TERRAIN FOLLOWING. (U)

DESCRIPTIVE NOTE: QUARTERLY TECHNICAL REPT. NO. 4, 1 MAR31 MAY 63,
MAY 63 55P RUBY,W. J. ;
REPT. NO. 1H1715E4
CONTRACT: N6001958660

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON PROJECT DIRECT.

DESCRIPTORS: (*TERRAIN AVOIDANCE, AIRCRAFT), (*PILOTS, TERRAIN AVOIDANCE), LOW ALTITUDE, FLIGHT PATHS, DISPLAY SYSTEMS, HUMAN FACTORS ENGINEERING, COMPUTERS, PENETRATION, PROGRAMMING (COMPUTERS), MATHEMATICAL ANALYSIS, TRACKING, TEST METHODS, SIMULATION (U)

THE PRIMARY OBJECTIVE OF THE AREA OF EFFORT CALLED TERRAIN AVOIDANCE IS TO PROVIDE A FLIGHT CAPABILITY AT SUFFICIENTLY LOW CLEARANCE ALTITUDES ABOVE THE TERRAIN THAT THE PENETRATING AIRCRAFT WILL BE PROTECTED FROM GROUND-BASED OR AIRBORNE ENEMY WEAPONS SYSTEMS BY TAKING ADVANTAGE OF THE MASKING AFFORDED DUE TO THE HEIGHT VARIATIONS OF THE TERRAIN. (AUTHOR) (U)

CDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-437 588
HUMAN SCIENCES RESEARCH INC MCLEAN VA

INFORMATION-PROCESSING TASKS IN TACTICAL ACTION SELECTION: PERFORMANCE OF EXPERIENCED SUBMARINE OFFICERS IN WEIGHTING MULTIPLE CRITERIA FOR DEPTH SELECTION. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR JAN 62-MAR 64,
MAR 64 150P VAUGHAN,W. S. ,JR.;
VIRNELSON,T. R. ;FRANKLIN,R. D.;
REPT. NO. HSR-RR-63/26-AE
CONTRACT: NONR367100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DATA PROCESSING, JOB ANALYSIS), (*SUBMARINE PERSONNEL, OFFICER PERSONNEL), HUMAN FACTORS ENGINEERING, SELECTION, PERFORMANCE(HUMAN) (U)

THE PROBLEM OF HOW TO ALLOCATE TASKS BETWEEN MEN AND EQUIPMENT COMPONENTS OF A COMMAND AND CONTROL SYSTEM IS ADDRESSED. SPECIFIC INFORMATIONPROCESSING STEPS INVOLVED IN THE SELECTION OF A COURSE OF ACTION FROM AMONG ALTERNATIVES ARE DEFINED AS THE TASKS TO BE ALLOCATED IN A MAN/COMPUTER PARTNERSHIP. PERFORMANCE DATA REFLECTING THE ABILITY OF EXPERIENCED TACTICAL COMMANDERS TO PERFORM EACH OF THESE FIVE INFORMATION-PROCESSING TASKS SINGLY AND IN COMBINATION ARE REQUIRED AS A PART OF THE DATA BASE FOR ALLOCATION DECISION. THE RESULTS IDICATE THAT ALTHOUGH INDIVIDUAL COMMANDERS DIFFER FROM ONE ANOTHER IN THE IMPORTANCE THEY ATTACH TO A SET OF DEPTH SELECTION CRITERA, ANY ONE OFFICER IS HIGHLY CONSISTENT OF HIS JUDGMENTS OF IMPORTANCE AND THESE JUDGMENTS ARE STABLE OVER TIME AND SENSITIVE TO DIFFERENCES IN THE TACTICAL SITUATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-453 887
RAND CORP SANTA MONICA CALIF

ANALYSIS FOR MILITARY DECISIONS. (U)

NOV 64 382P QUADE,E. S. ;
REPT. NO. R387PR
CONTRACT: AF49 638 700

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DECISION MAKING, AIR FORCE RESEARCH), DEFENSE SYSTEMS, SYSTEMS ENGINEERING, OPERATIONS RESEARCH, GAME THEORY, MATHEMATICAL MODELS, STRATEGIC WARFARE, LANDING FIELDS, JET FIGHTERS, USSR, DEPLOYMENT, JET BOMBERS, COSTS, REASONING, HUMAN FACTORS ENGINEERING, COMPUTERS (U)

CONTENTS: ANALYSIS FOR AIR FORCE DECISIONS, THE SELECTION AND USE OF STRATEGIC AIR BASES, THE WHY AND HOW OF MODEL BUILDING, THE RELEVANCE OF COSTS, ANALYSIS AND DESIGN OF CONFLICT SYSTEMS, ASSUMPTIONS ABOUT ENEMY BEHAVIOR, GAMING METHODS AND APPLICATIONS, STRATEGIES FOR DEVELOPMENT, MATHEMATICS AND SYSTEMS ANALYSIS, THE USE OF COMPUTERS, COSTING METHODS, PITFALLS IN SYSTEMS ANALYSIS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-465 851
NAVAL PERSONNEL RESEARCH ACTIVITY SAN DIEGO CALIF

METHOD DEVELOPMENT FOR BASIC TECHNICAL SKILLS RESEARCH. (U)

DESCRIPTIVE NOTE: PROGRESS REPT.,
MAY 65 19P SILVERMAN,JOE ;CARR,MALCOLM J. ;
REPT. NO. SRR-65-4
PROJ: PF-16011001
TASK: 3 1605 03 0151

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*NAVAL PERSONNEL, MANPOWER), JOB ANALYSIS, HUMAN FACTORS ENGINEERING, MILITARY REQUIREMENTS, DATA PROCESSING, COMPUTER PROGRAMMING, MANAGEMENT PLANNING AND CONTROL (U)

RESEARCH IS BEING CONDUCTED TO DEVELOP A METHOD FOR DETERMINING TECHNICAL SKILLS REQUIRED FOR CURRENT AND FUTURE WEAPONS AND SUPPORT SYSTEMS. IT IS TO SERVE AS A BASIS FOR THE NAVY ENLISTED PERSONNEL CLASSIFICATION STRUCTURE REQUIRED IN THE NEXT DECADE. THE APPLICATION OF A MULTIDIMENSIONAL APPROACH TO OCCUPATIONAL ANALYSIS WAS EXPLORED. THIS METHOD INVOLVES THE ANALYSIS OF TASK PATTERNS IN TERMS OF THE TECHNICAL, ORGANIZATIONAL, AND COMMUNICATIONAL DIMENSIONS OF THE WORK SITUATION. THE ACRONYM SAMOA (SYSTEMATIC APPROACH TO MULTIDIMENSIONAL OCCUPATIONAL ANALYSIS) HAS BEEN ADOPTED AS A LABEL FOR THIS METHOD. AN ITERATIVE COMPUTER CLUSTERING PROGRAM WAS DEVISED TO GROUP SIMILAR TASK PATTERNS INTO HOMOGENEOUS OCCUPATIONAL SEGMENTS. A METHOD OF DETERMINING SKILL LEVELS WITH HIGH RELIABILITY WAS DEVELOPED TO CLASSIFY TASKS INTO A HIERARCHY OF DIFFICULTY AND COMPLEXITY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-467 356
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF ELECTRICAL ENGINEERING

A PROBLEM SOLVING FACILITY. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT., APR 63-JUL 65,
JUL 65 62P WEXELBLAT,RICHARD L. ;
REPT. NO. 66-02
CONTRACT: NONR55148

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DECISION MAKING, COMPUTERS), (*REASONING, COMPUTERS), REAL TIME, INFORMATION RETRIEVAL, COMPUTER PROGRAMMING, PROGRAMMING LANGUAGES, COMPUTER STORAGE SYSTEMS, DATA STORAGE SYSTEMS, LEARNING, COMPUTER LOGIC, DIGITAL COMPUTERS, HUMAN FACTORS ENGINEERING (U)
IDENTIFIERS: ASSOCIATIVE STORAGE, ON-LINE SYSTEMS (U)

THE OBJECTIVE OF THE REPORTED WORK IS TO SET UP A COMPUTER WITH A LARGE MEMORY FOR ON-LINE, REAL TIME USE TO AID IN HUMAN PROBLEM SOLVING, COMBINING THE COMPUTATIONAL ABILITIES OF THE COMPUTER AND ITS ABILITY TO STORE, RETRIEVE AND MANIPULATE LARGE MASSES OF DATA. INFORMATION RETRIEVAL PROGRAMS USE MULTILIST TECHNIQUES TO SIMULATE AN ASSOCIATIVE MEMORY. MULTILANG, THE EXECUTIVE LANGUAGE, SERVES BOTH AS A CONTROL LANGUAGE AND AS A PROGRAMMING LANGUAGE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-475 376 9/2 5/1 5/8
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A STUDY OF SOME SOFTWARE PARAMETERS IN TIME-SHARING SYSTEMS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
65 147P GRIMES ,FRED M. ;OTTO,
RONALD E. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTER PROGRAMMING, SCHEDULING), MANAGEMENT ENGINEERING, TIME STUDIES, COMPUTERS, SIMULATION, MATHEMATICAL ANALYSIS, DATA PROCESSING, HUMAN FACTORS ENGINEERING, OPTIMIZATION, ERRORS, COMPUTER PERSONNEL, COMPUTER OPERATORS, CONFIGURATION, EFFECTIVENESS (U)
IDENTIFIERS: FORTRAN, COMPUTER PROGRAMS (U)

A REVIEW IS MADE OF SOME EXISTING TIME-SHARING COMPUTER SYSTEMS AND AN EXPLORATION OF VARIOUS SOFTWARE CHARACTERISTICS IS CONDUCTED. THIS INVESTIGATION IS CONDUCTED USING A COMPUTER PROGRAM WITH WHICH A TYPICAL TIME-SHARING SYSTEM CAN BE SIMULATED. THE BASIC SYSTEM PARAMETERS EXAMINED ARE: (1) THE METHOD OF DETERMINING THE QUANTUM TIME FOR EACH USER PER RESPONSE CYCLE, (2) THE LENGTH OF THE DESIRED RESPONSE CYCLE, (3) THE NUMBER OF REMOTE STATIONS PERMITTED AND (4) THE MAXIMUM NUMBER OF USERS PERMITTED IN THE QUEUE AT ONE TIME. THE RESULTS OF THESE SIMULATION RUNS ARE PRESENTED. THE EFFECTS OF THE VARIOUS PARAMETERS UPON THE AVERAGE RESPONSE CYCLE TIME, THE AVERAGE NUMBER IN THE QUEUE AWAITING SERVICE, THE AVERAGE LENGTH OF TIME A USER IS IN THE QUEUE AND THE COMPUTATIONAL EFFICIENCY PLUS OTHER CHARACTERISTICS OF THE SYSTEM ARE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-481 350 9/2
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

AN INTEGRATED DISPLAY AND CONTROL SYSTEM FOR MAN-MACHINE COMMUNICATION. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
62 132P LAWSON,CURTIS G. ;

UNCLASSIFIED REPORT
AVAILABILITY: MICROFICHE COPIES ONLY.
SUPPLEMENTARY NOTE: MICROFICHE ONLY AFTER ORIGINAL COPIES EXHAUSTED.

DESCRIPTORS: (*MAN MACHINE SYSTEMS, *DIGITAL COMPUTERS), CONTROL SYSTEMS, COMPUTER PROGRAMMING, DESIGN, INPUT OUTPUT DEVICES, RADAR SCANNING, CODING, DISPLAY SYSTEMS, DATA PROCESSING, HUMAN FACTORS ENGINEERING (U)

COMPUTER ORIENTED SYSTEMS HAVE CREATED THE NEED FOR A CLOSER INTERACTION BETWEEN MEN AND COMPUTERS. THIS THESIS IS AN EVALUATION OF, AND THE RESULTING SYSTEM DESIGN OF ONE SUCH SYSTEM. THE MAIN PORTION OF THE DESIGN IS THAT OF THE OPERATOR'S DISPLAY AND CONTROL CONSOLE FOR THIS SYSTEM. INCLUDED AS A PORTION OF THE DESIGN PROBLEM IS A COMPUTER PROGRAM FOR THE MECHANIZATION OF WIRING DATA FOR CONSTRUCTING THE DIGITAL EQUIPMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-486 382 5/5
NEW YORK UNIV N Y DEPT OF INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH

FACTORS AFFECTING INFORMATION STORAGE AND RETRIEVAL IN MAN. (U)

DESCRIPTIVE NOTE: FINAL REPT. SEP 63-JUN 66,
JUN 66 19P MAYZNER,MARK S. ;
CONTRACT: NONR-285(56)
PROJ: NR-196-027

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA STORAGE SYSTEMS, HUMAN FACTORS ENGINEERING), (*INFORMATION RETRIEVAL, HUMAN FACTORS ENGINEERING), HUMANS, DECISION MAKING, COMMAND AND CONTROL SYSTEMS, DATA PROCESSING, OPERATORS(PERSONNEL), DESIGN, DISPLAY SYSTEMS, CODING, RECALL, PERFORMANCE(HUMAN), MATHEMATICAL MODELS, RETENTION(PSYCHOLOGY), INPUT OUTPUT DEVICES (U)

THIS FINAL REPORT DISCUSSES IN SOME DETAIL THE MAJOR RESULTS OF SOME 14 STUDIES THAT EXAMINED THE EFFECTS OF FOUR PARAMETERS NAMELY, (1) CODING OF INFORMATION, (2) ORGANIZATION OF INFORMATION, (3) AMOUNT OF INFORMATION, AND (4) DISPLAY TIME, ON INORMATION STORAGE AND RETRIEVAL CAPACITY IN MAN. FIVE STUDIES DEALT SPECIFICALLY WITH CODING, THREE STUDIES DEALT SPECIFICALLY WITH ORGANIZATION, TWO STUDIES DEALT SPECIFICALLY WITH AMOUNT, AND FOUR STUDIES DEALT SPECIFICALLY WITH DISPLAY TIME. THE RESULTS OF ALL 14 STUDIES WERE RELATED TO A VARIETY OF DISPLAY DESIGN PROBLEMS IN MILITARY 'COMMAND AND CONTROL' SYSTEMS AND A NUMBER OF SPECIFIC DISPLAY DESIGN RECOMMENDATIONS ARE OFFERED BASED ON THE RESEARCH FINDINGS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-486 869 17/2.1 17/7 5/10
ITT COMMUNICATION SYSTEMS INC PARAMUS N J

CHANNEL AND TRAFFIC STATUS COLLECTION AND DISPLAY. VOLUME II. STUDY OF HUMAN FACTORS IN SYSTEM CONTROL OF AIR COMMUNICATIONS TRAFFIC. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUN 60 145P PINE,H. H. ;
CONTRACT: AF 30(635)-12857
TASK: 5122-00-00
MONITOR: ESD TR-66-465-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH RADIO CORP. OF AMERICA, NEW YORK. SURFACE COMMUNICATIONS SYSTEMS LAB. SEE ALSO VOLUME 1, AD-486 868L.

DESCRIPTORS: (*COMMUNICATIONS CENTRAL, HUMAN FACTORS ENGINEERING), (*GLOBAL COMMUNICATION SYSTEMS, DATA PROCESSING), (*ADAPTIVE COMMUNICATIONS, SYSTEMS ENGINEERING), CONTROL SYSTEMS, DISPLAY SYSTEMS, DESIGN, MAP PROJECTION, CONTROL PANELS, MAINTENANCE PERSONNEL, OPERATORS(PERSONNEL), SWITCHING CIRCUITS, JOB ANALYSIS, TRAINING DEVICES, APPLIED PSYCHOLOGY, PERCEPTION(PSYCHOLOGY), REASONING, DECISION MAKING, RADIO RELAY SYSTEMS (U)
IDENTIFIERS: AIRCOM (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-600 653
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AERONAUTICAL COMPUTER LAB

A PROPOSED METHOD OF ERROR SCORING CONTINUOUS TASKS IN PSYCHOLOGICAL AND PHYSIOLOGICAL EXPERIMENTS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 64 15P FUTTERWEIT,A. ;
REPT. NO. NADC-AC-6405

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PERFORMANCE (HUMAN), ERRORS), (*PSYCHOLOGICAL TESTS, ERRORS), (*ERRORS, PSYCHOLOGICAL TESTS), PSYCHOPHYSIOLOGY, BIONICS, HUMAN FACTORS ENGINEERING, PROBABILITY, MEASURE THEORY, DATA PROCESSING, DIGITAL RECORDING SYSTEMS, PROGRAMMING, COMPUTERS (U)

A METHOD OF ERROR SCORING IS PROPOSED UTILIZING ERROR AMPLITUDE PROBABILITY DENSITY FUNCTIONS. THE POTENTIAL BENEFITS OF THIS METHOD ARE DISCUSSED IN THE INTRODUCTION. THE TECHNIQUE FOR MECHANIZING THE PROPOSED METHOD IS PRESENTED IN DETAIL FROM DATA ACQUISITION TO FINAL OUTPUT AND PRESENTATION OF PROCESSED DATA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-601 834
BELL HELICOPTER CO FORT WORTH TEX

ALTIMETER DISPLAY STUDY. PART I. SUMMARY AND REVIEW OF DATA REQUIREMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT., PT. 1, MAY 60-JAN 63, MAY 64 86P MATHENY,W. G. ;
CONTRACT: AF33 616 8236
PROJ: 6190
TASK: 619008
MONITOR: ASD TDR63 621 P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*ALTIMETERS, DISPLAY SYSTEMS), (*FLIGHT CONTROL SYSTEMS, SPECIFICATIONS), (*HUMAN FACTORS ENGINEERING, DISPLAY SYSTEMS), (*DATA PROCESSING, CONTROL SYSTEMS), CONTROL PANELS, DESIGN, OPERATIONS RESEARCH, OPTIMIZATION, AVIATION PERSONNEL, OPERATORS (PERSONNEL), TRAINING, REVIEWS (U)

THE REPORT PRESENTS A BRIEF OVERVIEW OF A NUMBER OF REPORTS DEALING WITH THE SUBJECT OF FLIGHT CONTROL INFORMATION REQUIREMENTS. THE DISTINCTION IS MADE BETWEEN SYSTEM DATA REQUIREMENTS (AS THE TOTALITY OF DATA TO BE PROCESSED BY THE SYSTEM) AND INFORMATION REQUIREMENTS (AS THE TOTALITY OF DATA TO BE PROCESSED BY THE HUMAN OPERATOR). (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-602 042
BIO-DYNAMICS INC CAMBRIDGE MASS

DESIGN AND USE OF INFORMATION SYSTEMS FOR AUTOMATED ON-THE-JOB TRAINING. II. DESIGN OF SELF-INSTRUCTI' AL FEATURES, (U)

JAN 64 34P SHERIDAN,THOMAS B. ;DUGGAR, BENJAMIN C. ;MAYER,SYLVIA R. ;
CONTRACT: AF19 628 455
PROJ: 7682
TASK: 768204
MONITOR: ESD TDR64 234

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMMAND AND CONTROL SYSTEMS, TRAINING DEVICES), (*TRAINING DEVICES, TEACHING MACHINES), BEHAVIOR, HUMAN FACTORS ENGINEERING, CODING, PROGRAMMING (COMPUTERS), DECISION MAKING, TRAINING, LEARNING, EDUCATION, COMPUTERS, LANGUAGE, AUTOMATION, MODELS (SIMULATIONS), DESIGN (U)
IDENTIFIERS: SAGE (U)

THE REPORT IS CONCERNED WITH HUMAN ENGINEERING FACTORS IN THE DESIGN OF INFORMATION SYSTEMS. IN PARTICULAR IT IS ADDRESSED TO THE DESIGN OF SELF-INSTRUCTIONAL FEATURES FOR THESE SYSTEMS. IT DESCRIBES THEORIES, METHODOLOGY, AND DESIGN PRINCIPLES FOR IMPLEMENTATION OF SELF-INSTRUCTIONAL FEATURES. THE DESIGN PRINCIPLES WERE INDUCED FROM THE EXPLORATORY RESEARCH ON LABORATORY MODELS OF INFORMATION SYSTEMS WHICH IS REPORTED IN VOLUME I OF THIS SERIES (AD-602 041), FROM STUDIES ON CURRENT INFORMATION SYSTEMS, AND FROM A LITERATURE REVIEW. THE OPERATIONAL CONCEPTS UNDERLYING THE STUDY ARE STATED, AND AN EQUIPMENT DESIGN PHILOSOPHY IS PROPOS. D TO COMPLEMENT THIS OPERATIONAL CONCEPT. (AUTHOF) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-602 617
ELECTRONIC SYSTEMS DIV L G HANSCOM FIELD MASS

AN AUTOMATED FACILITY FOR FORCED-CHOICE SIGNAL DETECTION EXPERIMENTATION, (U)

APR 64 32P WATKINS,WILLIAM H. ;NICKERSON, RAYMOND S. ;SCHJELDERUP,JOHN R. ;
PROJ: 7682
MONITOR: ESD , TDR64 383

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SIGNAL GENERATORS, DESIGN), (*VISUAL SIGNALS, VISUAL PERCEPTION), (*AUDITORY SIGNALS, AUDITORY PERCEPTION), PERCEPTION, DISPLAY SYSTEMS, DATA PROCESSING, INPUT OUTPUT DEVICES, DATA PROCESSING, COMPUTERS, TAPES, CONTROL SYSTEMS, ANECHOIC CHAMBERS, NOISE, HUMAN FACTORS ENGINEERING (U)

THE FACILITY DESCRIBED ALLOWS PRESENTATION OF VISUAL, AUDITORY, OR BISENSORY SIGNALS FOR THE STUDY OF FORCED-CHOICE SIGNAL DETECTION. MEANS ARE PROVIDED FOR INFORMING THE OBSERVER, PRIOR TO EACH TRIAL, OF THE SIGNAL MODE HE SHOULD EXPECT ON THAT TRIAL. CONSIDERABLE FLEXIBILITY IS PROVIDED FOR THE SCHEDULING OF INTERMITTENT NOISE (AUD. AND/OR VIS.) WITHIN AN OBSERVATION INTERVAL. THE FACILITY INCLUDES AN OBSERVER'S STATION WITHIN AN ANECHOIC CHAMBER AND A CONTROL UNIT IN A SEPARATE ROOM. DATA COLLECTION SESSIONS ARE FULLY AUTOMATED. THE CONTROL SYSTEM READS A PAPER TAPE INPUT AND PRODUCES A PAPER TAPE OUTPUT. INPUT (STIMULUS SCHEDULING) TAPES ARE GENERATED, AND OUTPUT (DATA) TAPES ARE PROCESSED, BY A PDP-1 COMPUTER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-604 578
RAND CORP SANTA MONICA CALIF

HUMAN FACTORS IN SYSTEMS RESEARCH, (U)

JUN 61 33P HAYTHORN,W. W. ;
REPT. NO. P-2337

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, MACHINES), (*AUTOMATION, HUMAN FACTORS ENGINEERING), SIMULATION, PSYCHOLOGY, DECISION MAKING, PERSONNEL, WEAPON SYSTEMS, LOGISTICS, TRAINING (U)

A NUMBER OF SYSTEMS RESEARCH EFFORTS IN WHICH HUMAN FACTORS CONSIDERATIONS PLAY KEY ROLES ARE DESCRIBED WITH A VIEW TO ILLUSTRATING TECHNIQUES FOR EXAMINING HUMAN FACTORS PROBLEMS IN A BROAD SYSTEMS CONTEXT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-604 866
INSTITUTE OF ENVIRONMENTAL PSYCHOPHYSIOLOGY UNIV OF MASSACHUSETTS AMHERST

PERCEPTION AND SHORT TERM MEMORY UNDER WORK LOAD STRESS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 64 52P SEIBEL,ROBERT ;CHRIST, RICHARD E. ;TEICHNER,WARREN H.;
CONTRACT: N61339 1303
MONITOR: NAVTRADEVCEN 1303-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTER OPERATORS, STRESS (PSYCHOLOGY)), (*PERCEPTION (PSYCHOLOGY), STRESS (PSYCHOLOGY)), (*MEMORY (PSYCHOLOGY), STRESS (PSYCHOLOGY)), (*STRESS (PSYCHOLOGY), PERFORMANCE (HUMAN)), COMMUNICATION SYSTEMS, ADJUSTMENT (PSYCHOLOGY), INPUT OUTPUT DEVICES, DATA STORAGE SYSTEMS, SYSTEMS ENGINEERING, TRAINING, VISUAL PERCEPTION, RECALL, HUMAN FACTORS ENGINEERING, DATA PROCESSING, ANALYSIS OF VARIANCE (U)

THE PRIMARY PURPOSE OF THESE STUDIES WAS TO EXPLORE THE QUESTION OF WHETHER A PERFORMANCE WHICH IS CRITICALLY DEPENDENT UPON SHORT-TERM MEMORY BREAKS DOWN WITH INPUT RATE INCREASES WHEN PERFORMANCE IS MEASURED IN ABSOLUTE TERMS. SINCE, FOR ANY FIXED INPUT TIME, INCREASES IN QUANTITY OF INFORMATION REPRESENT INCREASES IN THE INPUT RATE, A BREAKDOWN, IF DEMONSTRATED, CAN BE THOUGHT OF AS THE RESULT OF EXCEEDING THE MEMORY STORAGE RATE. THUS, IT COULD BE ASKED, GIVEN SUCH A BREAKDOWN, WHETHER THE ABSOLUTE PERFORMANCE LEVEL MIGHT NOT BE INCREASED BY REDUCING THE INFORMATIONAL INPUT LOAD. IN SIMPLER TERMS, WILL S REPORT MORE CORRECT ITEMS WHEN THERE IS LESS TO BE RECALLED THAN WHEN THERE IS TOO MUCH TO BE RECALLED. THE STUDIES WERE SET UP WITH THESE QUESTIONS IN MIND. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-607 526
DUNLAP AND ASSOCIATES INC DARIEN CONN

DEVELOPMENT OF A MAN-COMPUTER SYSTEM FOR SOLVING A TARGETING PROBLEM, (U)

64 22P GAGLIARDI,UGO O. ;
CONTRACT: NONR3602 00

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PAPER PRESENTED AT THE WESTERN STATES NAVY RESEARCH AND DEVELOPMENT CLINIC, MONTANA STATE COLLEGE, BOZEMAN, 22-24 JUL 64.

DESCRIPTORS: (*SYSTEMS ENGINEERING, WARFARE), (*LINEAR PROGRAMMING, UNDERSEA WARFARE), (*SUBMARINES, SCHEDULING), TARGETS, WEAPON SYSTEMS, OPTIMIZATION, SEARCH THEORY, GUIDED MISSILE DEFENSE SYSTEMS, OPERATIONS RESEARCH, HUMAN FACTORS ENGINEERING, DEPLOYMENT, AUTOMATION (U)
IDENTIFIERS: TARGETING (U)

THIS STUDY WAS CONDUCTED TO DEVELOP A METHOD FOR THE DESIGN OF COMPUTERIZED PROBLEM-SOLVING AIDS. THE METHOD RELIES ON THE OBSERVATION OF PROBLEM-SOLVING BEHAVIOR AND UTILIZES THE EVIDENCES OF HEURISTIC PROCEDURES DISPLAYED BY THE SUBJECT AS INDICATORS OF PROCESSING OVERLOADS. THIS INFORMATION IS, IN TURN, USED TO FORMULATE PROBLEM-SOLVING AIDS WHOSE EFFECTIVENESS IS VERIFIED EXPERIMENTALLY. THE PROBLEMS USED WERE SELECTED BECAUSE THEY HAVE A FORMAL STRUCTURE WHICH ADMITS MANY INTERPRETATIONS--FROM THE DESIGN OF MINIMAL SWITCHING CIRCUITS TO THE DISPOSITON OF WEAPON SYSTEMS. THE SUBJECT'S TASK WAS TO ALLOCATE HYPOTHETICAL MISSILE-FIRING SUBMARINES SO THAT A SPECIFIED NUMBER OF TARGETS WAS COVERED BY THE FEWEST POSSIBLE SHIPS. THIS TASK COULD BE FORMULATED AS A LINEAR INTEGER PROGRAMMING PROBLEM WHICH WAS SOLVABLE BY GOMORY'S ALGORITHM. HOWEVER, COMPLETE AUTOMATION OF THE TASK, USING THIS ALGORITHM, WAS UNDESIRABLE BECAUSE THE PROCEDURE WAS EXCESSIVELY TIME-CONSUMING WHEN MORE THAN A FEW SOLUTIONS WERE REQUIRED. EXPERIMENTS INDICATED THAT THE SUBJECT'S PROCESSING LIMITATIONS RESULTED IN A SLOW AND BIASED SEARCH FOR ELEMENTS FROM WHICH TO ASSEMBLE SOLUTIONS. THE AIDED SYSTEM DELEGATED THE SUBTASK OF FINDING KEY ELEMENTS TO AN AUTOMATED PROCESS AND LET THE PERSON ASSEMBLE THESE ELEMENTS INTO DEPLOYMENTS. THE EFFECTIVENESS OF THIS ARRANGEMENT WAS SHOWN BY THE FACT THAT AIDED SUBJECTS FOUND MORE SOLUTIONS, (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-607 735
IIT RESEARCH INST CHICAGO ILL

ERROR CONTROL METHODS FOR AN AUTOMATIC CHECKOUT SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 1 JAN-14 DEC 63, MAR 64 159P LEWIS,THEODORE S. ;HUEBNER, WALTER J. ;
CONTRACT: AF33 657 10271
PROJ: 7184 8119
TASK: 718404
MONITOR: AMRL , TDR64 17

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CHECKOUT EQUIPMENT, HUMAN FACTORS ENGINEERING), (*HUMAN FACTORS ENGINEERING, ERRORS), (*CHECKOUT PROCEDURES, CONTROL SYSTEMS), AUTOMATIC, COMPUTERS, PROGRAMMING (COMPUTERS), SIMULATION, GRAPHICS, TEST METHODS (U)

THE DEVELOPMENT OF ERROR CONTROL TECHNIQUES FOR THE MANCOMPUTER INTERFACE OF AN AUTOMATIC CHECKOUT SYSTEM IS PRESENTED. TO MINIMIZE HUMAN ERROR IN MAN-COMPUTER COMMUNICATION IN THE AUTOMATIC CHECKOUT COMPLEX PRECEDENCE AND CONNECTION MATRIX TECHNIQUES FOR USE WITH TOTAL AND PARTIAL SIMULATION METHODS WERE DEVELOPED TO DETECT ERRORS IN OPERATIONAL AUTOMATIC CHECKOUT COMPUTER PROGRAMS. PRECEDENCE AND CONNECTION MATRIX TECHNIQUES FOR USE WITH TOTAL SIMULATION METHODS WERE INCORPORATED INTO A SIMULATION COMPUTER PROGRAM WHICH COMPRISED A TOTAL SIMULATION OF THE COMPUTER WHICH CONTROLS AN OPERATIONAL AUTOMATIC CHECKOUT SYSTEM. THE MODIFIED SIMULATION WAS THEN USED TO PROCESS SEVERAL COMPUTER RUNS OF AN OPERATIONAL AUTOMATIC CHECKOUT COMPUTER PROGRAM. THE BASIC CONCLUSIONS WERE THAT PRECEDENCE AND CONNECTION MATRIX TECHNIQUES USED WITH TOTAL AND PARTIAL SIMULATION METHODS CAN BE USEFUL IN DETECTING ERRORS IN OPERATIONAL COMPUTER-CONTROLLED AUTOMATIC CHECKOUT SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-609 749
MASSACHUSETTS INST OF TECH CAMBRIDGE ENGINEERING PROJECTS LAB

HUMAN USE OF SHORT TERM MEMORY IN PROCESSING INFORMATION ON A CONSOLE, (U)

SEP 64 49P ZEIGLER,BERNARD P. ;SHERIDAN, THOMAS B. ;
REPT. NO. DSR-9960-1
CONTRACT: AF19 628 3317
PROJ: 7682
TASK: 768204
MONITOR: ESD , TDR64 620

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (>COMPUTER PERSONNEL, MEMORY(PSYCHOLOGY)), (*MEMORY DEVICES, HUMAN FACTORS ENGINEERING), DECISION MAKING, COMPUTERS, INFORMATION RETRIEVAL, DATA PROCESSING, DATA STORAGE SYSTEMS, COMMUNICATION THEORY, LEARNING (U)

THE REPORT ASSUMES THAT AN OPERATOR'S CONSOLE CONSTITUTES A THIRD FORM OF MEMORY IN ADDITION TO THAT INTEGRAL TO THE HUMAN AND THAT INTEGRAL TO THE MACHINE WHICH IS NOT DIRECTLY ACCESSIBLE TO THE HUMAN. QUESTIONS ARE RAISED CONCERNING THE CHARACTERISTIC MODES OF HUMAN STORAGE AND RETRIEVAL OF INFORMATION FROM INTERNAL MEMORY WHEN SUCH EXTERNAL MEMORY IS ACCESSIBLE. THE REPORT ALSO INTRODUCES THE CONCEPT OF ASSOCIATIVE MEMORY NETS FORMED BY CORELATED IMAGES OF EXTERNAL EVENTS. A LIST PROCESSING EXPERIMENT IS DESCRIBED. STORAGE STRUCTURES CHARACTERIZING INTERNAL HUMAN MEMORY AND EXTERNAL CONSOLE MEMORY IN THIS TASK ARE POSTULATED. A RETRIEVAL MODEL IMPLIED BY THESE STURCTURES IS CONSTRUCTED TO ACCOUNT FOR THE EFFECTS OF COMPUTATION AND LEARNING UPON THE FEATURES OF THE EXPERIMENTALLY OBTAINED CURVES. INSUFFICIENT RETRIEVAL OF REQUIRED INFORMATION FROM INTERNAL MEMORY IS ASSUMED TO NECESSITATE EXTERNAL MEMORY SEARCH. THE EFFECT OF COMPUTATION IS TO INCREASE THE PROBABILITY OF INSUFFICIENT RETRIEVAL AND HENCE THE FREQUENCY OF EXTERNAL SEARCH. LEARNING DECREASES THIS PROBABILITY. THE EFFECTS OF INDUCING ALTERNATE FORMS OF INTERNAL STORAGE ARE STUDIED AND FOUND GENERALLY TO RESULT IN INCREASED STORAGE AND RETRIEVAL TIMES. IMPLICATIONS FOR CONSOLE DESIGN ARE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-610 249
DOUGLAS AIRCRAFT CO INC LONG BEACH CALIF

ARMY-NAVY INSTRUMENTATION PROGRAM HISTORICAL REPORT. (U)

JUN 62 80P
REPT. NO. LB-40641

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INSTRUMENTATION, SYSTEMS ENGINEERING), (*SYSTEMS ENGINEERING, MILITARY RESEARCH), DISPLAY SYSTEMS, RESEARCH MANAGEMENT, FEASIBILITY STUDIES, COMPUTERS, HUMAN FACTORS ENGINEERING, MATERIALS, CIRCUITS, SIMULATION, FLIGHT INSTRUMENTS, DATA, MINIATURE ELECTRONIC EQUIPMENT, INSTRUMENT PANELS (U)

LACK OF ABILITY TO IMPLEMENT INSTRUMENTATION AND DISPLAY SYSTEMS WHICH WOULD BETTER FIT MAN'S REQUIREMENTS CAUSED ANIP TO CONDUCT RESEARCH IN MANY AREAS FOR BASIC INFORMATION AND FOR APPLICATION OF INFORMATION ALREADY AT HAND. THESE AREAS INCLUDED COMPUTER THEORY AND IMPLEMENTATION, MATERIALS, DISPLAY DEVICES, SENSORS, FEASIBILITY, HUMAN FACTORS AND SYSTEMS ANALYSIS. FEASIBILITY STUDIES INCLUDED ONE FIXED-WIND FLYABLE SYSTEM AND TWO ROTARY-WING SYSTEMS. LABORATORY FACILITIES ARE USED FOR HUMAN FACTORS AND SYSTEM RESEARCH, EVALUATION AND DEMONSTRATION. RESULTS OF THE PROGRAM ARE BREAKTHROUGHS IN HUMAN FACTORS REQUIREMENTS FOR DISPLAY CONTENT, DISPLAY DESIGN AND IMPLEMENTATION, MATERIALS AND THEIR RELATION TO ELECTROMAGNETIC PHENOMENA, DISPLAY DEVICES, COMPUTER THEORY AND CONSTRUCTION ADVANCES, AND INERTIAL SENSOR CONCEPTUAL EVALUATION WHICH HAS PRODUCED A NEW CONCEPT HAVING UNUSUALLY HIGH PRACTICAL APPLICATION POTENTIAL. ALL OTHER RESULTS ARE OVERSHADOWED BY PROOF THAT THE MAN-MACHINE SYSTEM AND REQUIREMENTS APPROACH COUPLED WITH RESEARCH ALLOCATED TO PROBLEM AREAS ON A PRIORITY BASIS CAN YIELD SYSTEMS OF SUPERIOR PERFORMANCE IN MINIMUM COST AND TIME. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-610 546
SPERRY RAND CORP LONG ISLAND CITY N Y FORD INSTRUMENT DIV

FEASIBILITY STUDY FOR A POSITION LOCATOR. (U)

DESCRIPTIVE NOTE: FINAL REPT.
DEC 64 33P
CONTRACT: DA18 001AMC286X

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•POSITION FINDING, MILITARY OPERATIONS), (•NAVIGATIONAL AIDS, MILITARY OPERATIONS), WARFARE, ARMY OPERATIONS, MILITARY PERSONNEL, DISTANCEMEASURING EQUIPMENT, ACCELEROMETERS, COMPUTERS, HUMAN FACTORS ENGINEERING, ENVIRONMENTAL TESTS, THEORY, FEASIBILITY STUDIES (U)

THIS REPORT DESCRIBES THE RESULTS OF A PROGRAM TO DESIGN, FABRICATE AND TEST A BREADBOARD MODEL OF A SELF CONTAINED MAN POSITION LOCATOR IN ORDER TO DEMONSTRATE THE FEASIBILITY OF THE CONCEPT AND TO SHOW THAT ACTUAL HARDWARE WOULD BE CAPABLE OF PERFORMING IN A REASONABLE AND USEFUL MANNER AND WITH REQUISITE ACCURACY. THE MAN POSITION LOCATOR UTILIZES A PEDOMETER STEP SENSOR, AN ACCELEROM ETER FOR MEASURING A STEP PARAMETER WHICH WOULD PROVIDE FOR VARIATIONS IN PACE LENGTH, A COMPUTER TO RECEIVE THESE SIGNALS AND CONVERT THEM INTO MAP COORDINATES AND TWO COUNTER TYPE INDICATORS, ONE FOR EACH MAP ORDINATE, TO INDICATE POSITION. IT WAS DEMONSTRATED UNDER MANY DIFFERENT TYPES OF TERRAIN AND GROUND SURFACE THAT A MAN'S POSITION COULD BE MEASURED TO ACCURACIES OF 2% AND BETTER. IT WAS ALSO RECOMMENDED THAT THE DEVICE BE DEVELOPED INTO A COMBAT USEFUL PACKAGE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-612 726
BUNKER-RAMO CORP CANOGA PARK CALIF

HUMAN ENGINEERING: PILOT FACTORS PROGRAM. (U)

DESCRIPTIVE NOTE: FINAL SUMMARY REPT. FOR 1 OCT 64-31 JAN 65,
FEB 65 18P MCTEE,A. C. ;SWARTZ,W. F. ;
CONTRACT: AF33 615 2214

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE. RESEARCH A CONTINUATION OF CONTRACT AF33 616 7752. AVAILABLE COPY WILL NOT PERMIT FULLY LEGIBLE REPRODUCTION. REPRODUCTION WILL BE MADE IF REQUESTED BY USERS OF DDC. COPY AVAILABLE FOR PUBLIC SALE.

DESCRIPTORS: (*LANDING, ALL WEATHER AVIATION), (*ALLWEATHER AVIATION, RESEARCH MANAGEMENT), (*HUMAN FACTORS ENGINEERING, FLIGHT CONTROL SYSTEMS), (*INSTRUMENT FLIGHT, ALL WEATHER AVIATION), PILOTS, AIRCRAFT EQUIPMENT, ROLL, PITCH (MOTION), OSCILLOGRAPHS, DATA PROCESSING (U)

THE WORK REPORTED IN THIS STUDY REPRESENTS A PORTION OF THE CONTINUING EFFORT TO DEFINE THE PILOT FACTORS ESSENTIAL TO SUCCESSFUL ALL-WEATHER LANDING. THE PROGRAM IS HERE DESCRIBED IN THREE GENERAL ACTIVITY AREAS, WHICH ARE CALLED RESPECTIVELY THE T-39, T-29, AND CONSULTING AREAS. THESE AREAS ARE CHARACTERIZED BY A COMMON PLAN OF APPROACH: TECHNICAL DIRECTION AND FURNISHING OF PROJECT EQUIPMENT BY THE LEAR-SIEGLER ENGINEERING SUPPORT GROUP, DEVELOPMENT OF INSTRUMENT FLYING PROCEDURES AND INFLIGHT CONDUCT OF STUDIES BY THE INSTRUMENT EVALUATION SECTION, AND DEVELOPMENT OF MEASUREMENT TECHNIQUES, DATA COLLECTION, REDUCTION, AND ANALYSIS BY THE GBUNKER-RAMO SUPPORT GROUP. THIS REPORT MAKES NO EFFORT AT THE DISTINCTION OF THE EFFORTS OF THE INDIVIDUAL ELEMENTS, EXCEPT THAT IT IS PERHAPS MORE CONVERSANT WITH THE ACTIVITIES OF THE HUMAN ENGINEERING SUPPORT GROUP. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-612 898
TRW COMPUTERS CO CANOGA PARK CALIF

AIR TRAFFIC CONTROL STUDIES. TERMINAL AREA SEQUENCING AND CONTROL. (U)

DESCRIPTIVE NOTE: REPT. NO. 10 (FINAL) 1 JAN 60-28 FEB 61,
FEB 61 253P JACKSON,A. S. ;OTTOSON,H. I. ; PARDEE,R. S. ;NALL,L. E. ;HOLLAND,F. C. ;
CONTRACT: FAA BRD112

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJECT TASC.

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

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

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-613 105
AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD MASS

RESEARCH IN COMPUTER SCIENCES, (U)

FEB 65 27P ZSCHIRNT,HANS H. ;
REPT. NO. SR-21 ,AFCRL-65-101
PROJ: 5632

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN AIR UNIVERSITY REVIEW (U.S.) V16 N1 P47-66 NOV-DEC 1964 (COPIES NOT AVAILABLE TO DDC OR CLEARINGHOUSE CUSTOMERS).

DESCRIPTORS: (*COMPUTERS, DATA PROCESSING), (*DATA PROCESSING, COMPUTERS), (*INFORMATION RETRIEVAL, THEORY), (*ARTIFICIAL INTELLIGENCE, DIGITAL COMPUTERS), MILITARY REQUIREMENTS, HUMAN FACTORS ENGINEERING, PATTERN RECOGNITION, PROGRAMMING (COMPUTERS), PROGRAMMING LANGUAGES, CYBERNETICS, DISPLAY SYSTEMS (U)

CONTENTS: SOME PROPERTIES OF DIGITAL COMPUTERS, SOME ASPECTS OF ARTIFICIAL INTELLIGENCE, PROBLEM SOLVING AND GAMES, PATTERN RECOGNITION, MAN/MACHINE INTERFACE, NEW CONCEPTS-NEW MACHINES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-615 758
OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS LAB OF AVIATION PSYCHOLOGY

THE INFLUENCE OF EXPERIENCE AND INPUT INFORMATION UPON POSTERIOR PROBABILITY ESTIMATION IN A SIMULATED THREAT-DIAGNOSIS SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 1 OCT 63-1 JUN 64,
APR 65 79P SCHUM,DAVID A. ;GOLDSTEIN, IRWIN L. ;SOUTHARD,JACK F.;
CONTRACT: AF33 657 10763
PROJ: 7184
TASK: 718403
MONITOR: AMRL , TR-65-25

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*THREAT EVALUATION, DECISION MAKING), (*DECISION MAKING, SIMULATION), (*PERFORMANCE (HUMAN), THREAT EVALUATION), (*COMPUTERS, THREAT EVALUATION), MATHEMATICAL PREDICTION, HUMAN FACTORS ENGINEERING, PSYCHOLOGY, PROBABILITY (U)
IDENTIFIERS: BAYES THEOREM (U)

TWO EXPERIMENTS ARE DESCRIBED IN WHICH POSTERIOR PROBABILITY ESTIMATES MADE BY HUMANS ARE COMPARED WITH SIMILAR ESTIMATES MADE BY A COMPUTER USING A MODIFICATION OF BAYES' THEOREM INCORPORATING HUMAN ESTIMATES OF P(D/H). THE TASK WAS TO ESTIMATE, ON THE BASIS OF INTELLIGENCE DATA FROM A SIMULATED THREAT-EVALUATION SITUATION, THE LIKELIHOOD OF VARIOUS ALTERNATIVE HYPOTHESES THAT COULD ACCOUNT FOR THE OBSERVED DATA. THE PURPOSE OF THE FIRST EXPERIMENT WAS TO DETERMINE THE EFFECT OF INCREASED EXPERIENCE UPON THE HUMAN'S ABILITY TO ESTIMATE POSTERIOR PROBABILITIES. THE PURPOSE OF THE SECOND EXPERIMENT WAS TO COMPARE HUMAN AND AUTOMATED POSTERIOR PROBABILITY ESTIMATES UNDER SEVERAL LEVELS OF INPUT DATA FIDELITY. IT WAS PREDICTED THAT, UNDER LOW FIDELITY CONDITIONS, HUMAN POSTERIOR PROBABILITY ESTIMATES WOULD BECOME INCREASINGLY INFERIOR TO AUTOMATED SOLUTIONS. THIS HYPOTHESIS WAS ONLY PARTIALLY CONFIRMED. IN BOTH EXPERIMENTS, BUT PARTICULARLY IN THE SECOND, THE HUMANS PROVIDED HIGHER POSTERIOR PROBABILITY ESTIMATES THAN THE CERTAINTY IN THE DATA JUSTIFIED. WITH RESPECT TO THE DESIGN OF DIAGNOSTIC SYSTEMS, THE PRESENT RESEARCH TENDS TO CONFIRM THE FEASIBILITY OF AUTOMATED BAYESIAN HYPOTHESIS-SELECTION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-616 544
BIO-DYNAMICS INC CAMBRIDGE MASS

DESIGN AND USE OF INFORMATION SYSTEMS FOR AUTOMATED ON-THE-JOB TRAINING. VOLUME III. EXPERIMENTAL USE OF THREE INSTRUCTIONAL CONCEPTS, (U)

MAR 65 84P SHERIDAN,THOMAS B. ;
CONTRACT: AF19 628 455
PROJ: 7682
TASK: 768204
MONITOR: ESD , TDR-64-234 V3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-602 041, AD-602 042.

DESCRIPTORS: (*TRAINING DEVICES, COMMAND AND CONTROL SYSTEMS), (*COMMAND AND CONTROL SYSTEMS, TRAINING DEVICES), DESIGN, AUTOMATION, TEACHING MACHINES, COMPUTERS, BEHAVIOR, GAME THEORY, PERFORMANCE(HUMAN), PERFORMANCE(HUMAN), DISPLAY SYSTEMS, CONTROL PANELS, ERRORS, DECISION MAKING, HUMAN FACTORS ENGINEERING, AIR FORCE PERSONNEL (U)
IDENTIFIERS: JOB TRAINING, JOBS, PERFORMANCE(HUMAN) (U)

THE REPORT DESCRIBES THREE EXPERIMENTS IN WHICH NOVEL TEACHING CONCEPTS WERE DEMONSTRATED. THESE CONCEPTS HAD BEEN PROPOSED IN PREVIOUS REPORTS BUT THEIR EFFECTIVENESS REMAINED TO BE VERIFIED EXPERIMENTALLY. THE RESULTS WERE: (1) A TEACHING PROGRAM ORDERED ACCORDING TO THE DISCOVERY PRINCIPLE SIGNIFICANTLY REDUCED ERRORS AND PERFORMANCE TIME OVER THAT OBSERVED AFTER TRAINING WITH A CONVENTIONAL TRAINING MANUAL. (2) SLIDES PROJECTED DIRECTLY ONTO A CONTROL CONSOLE, TOGETHER WITH A TAPED LECTURE, WERE FOUND TO BE AN EFFECTIVE METHOD OF PRESENTING AN AUTOMATED TRAINING PROGRAM. (3) GRAPHICAL LOGICAL FLOW DIAGRAMS WERE FOUND TO BE EFFICIENT INSTRUCTIONS FOR TEACHING PROCEDURES FOR PERFORMING A QUERYING-REASONING TASK. IT WAS CONCLUDED THAT THESE CONCEPTS SHOULD BE EXPLOITED IN TRAINING PROGRAMS FOR OPERATORS OF AIR FORCE INFORMATION SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-616 765
BUNKER-RAMO CORP CANOGA PARK CALIF

HUMAN ENGINEERING SUPPORT: PILOT FACTORS PROGRAM. (U)

DESCRIPTIVE NOTE: FINAL SUMMARY REPT. FOR 1 MAR-22 MAY 65.
MAY 65 21P
CONTRACT: AF33 615 2214

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: CONTINUATION OF CONTRACT AF33 616 7752, SEE ALSO AD-612 726.

DESCRIPTORS: (*INSTRUMENT FLIGHT, HUMAN FACTORS ENGINEERING), (*HUMAN FACTORS ENGINEERING, PILOTS), (*AIRCRAFT LANDINGS, ALLWEATHER AVIATION), (*FLIGHT CONTROL SYSTEMS, AIRCRAFT LANDINGS), GUIDANCE, DISPLAY SYSTEMS, AUTOMATIC, COMPUTER PROGRAMMING, DATA PROCESSING, LANDING, TRAINING PLANES (U)
IDENTIFIERS: T-29 AIRCRAFT (U)

THE REPORT COVERS THE FOUR GENERAL ACTIVITY AREAS. THESE AREAS ARE CHARACTERIZED BY A COMMON PLAN OF APPROACH: (1) TECHNICAL DIRECTION AND FURNISHING OF PROJECT EQUIPMENTS BY THE FLIGHT CONTROL DIVISION; (2) INSTALLATIONS AND MAINTENANCE OF PROJECT EQUIPMENT BY THE LEAR-SIEGLER ENGINEERING SUPPORT GROUP; (3) DEVELOPMENT OF INSTRUMENT FLYING PROCEDURES AND INFLIGHT CONDUCT OF STUDIES BY THE INSTRUMENT EVALUATION SECTION; AND (4) DEVELOPMENT OF MEASUREMENT TECHNIQUES, DATA COLLECTION, REDUCTION, AND ANALYSIS BY THE BUNKER-RAMO SUPPORT GROUP. EACH OF THE FOUR AREAS IS DISCUSSED AS AN ENTITY, WITH THE PROBLEMS AND PROGRESS OF THE INDIVIDUAL AREA PLACED IN CONTEXT. THE APPENDICES CONTAIN CHRONOLOGICAL ACCOUNTS OF: PRESENTATIONS TO MEMBERS OF THE INTERESTED FLYING COMMUNITY, INCLUDING DEMONSTRATION FLIGHTS IN PI-FAX AIRCRAFT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-617 288
TEXAS TECHNOLOGICAL COLL LUBBOCK SCHOOL OF ENGINEERING

OPTIMAL THREE-DIMENSIONAL WORK PLACE FOR THE SEATED WORKER. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
MAY 65 81P WYATT,RICHARD H. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•HUMAN FACTORS ENGINEERING, INDUSTRIAL PLANTS); (•INDUSTRIAL EQUIPMENT, HUMAN FACTORS ENGINEERING), ANTHROPOMETRY, PERFORMANCE(HUMAN), DESIGN, JOB ANALYSIS, ENGINEERING, CONTROL PANELS, MOTION, STATISTICAL ANALYSIS, FACTOR ANALYSIS, ANALYSIS OF VARIANCE, DATA PROCESSING, GRAPHICS (U)
IDENTIFIERS: INDUSTRIAL ENGINEERING (U)

THE PURPOSE OF THIS STUDY WAS TO INVESTIGATE THE WORK AREA FOR USE IN THE PERFORMANCE OF SMALL, MANUAL PRODUCTION OR ASSEMBLY JOBS AND TO DETERMINE THE BEST SHAPE FOR THIS THREE-DIMENSIONAL SPACE BASED UPON THE VARIABLE FACTORS THAT AFFECT WORK PERFORMANCE TIMES. THIS OPTIMAL SHAPE MAY ALSO BE APPLICABLE IN THE DESIGN OF SYSTEM CONTROL PANELS, WHERE RESPONSES REQUIRE HAND MOTION TO CONTROLS LOCATED ON A PANEL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-621 379
COMPUTER CONCEPTS INC SILVER SPRING MD

THE ROLE OF HUMAN FACTORS TASK DATA IN AEROSPACE SYSTEM DESIGN AND DEVELOPMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 15 JUN 64-15 FEB 65,

AUG 65 98P HANNAH,L. DUNCAN ;BOLDOVICI, JOHN A. ;ALTMAN,JAMES W.;MANION,RAYMOND C.
;

CONTRACT: AF33 615 1557
PROJ: 1710
TASK: 171006
MONITOR: AMRL , TR-65-131

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUBCONTRACTED TO AMERICAN INST. FOR RESEARCH, PITTSBURGH, PA.

DESCRIPTORS: (*DATA PROCESSING, HUMAN FACTORS ENGINEERING), (*HUMAN FACTORS ENGINEERING, WEAPON SYSTEMS), (*SPACE FLIGHT, SYSTEMS ENGINEERING), (*AIR FORCE, SYSTEMS ENGINEERING), MANAGEMENT ENGINEERING, PERSONNEL MANAGEMENT, DECISION MAKING, AUTOMATION, INFORMATION RETRIEVAL, SUPERVISORS, COMPUTERS, DATA STORAGE SYSTEMS, PERFORMANCE(HUMAN), GROUND SUPPORT EQUIPMENT (U)

ON THE BASIS OF INFORMATION GATHERED FROM GENERATORS AND USERS OF HUMAN FACTORS TASK DATA BY BOTH INTERVIEWS AND QUESTIONNAIRES AND BY A REVIEW OF RELEVANT LITERATURE, HUMAN FACTORS PERSONNEL AND DATA WERE IDENTIFIED, THE RELATIONS BETWEEN THEM DESCRIBED, AND RECOMMENDATIONS FOR AN AUTOMATED HUMAN FACTORS TASK DATA HANDLING SYSTEM PROPOSED. HUMAN FACTORS PERSONNEL WERE CLOSELY DIVISIBLE INTO FOUR HIERARCHICALLY ARRANGED GROUPS: PROGRAM LEVEL MANAGERS, PERSONNEL SUBSYSTEM MANAGERS, DEPARTMENT HEADS, AND NONMANAGERIAL PERSONNEL. IN GENERAL, AND FOR THE POPULATIONS DESCRIBED, MANAGERS OR SUPERVISORS WERE THE PRINCIPAL USERS AND NONMANAGERIAL PERSONNEL THE PRINCIPAL GENERATORS OF HUMAN FACTORS DATA. A FRAMEWORK THAT PERMITS CLASSIFICATION OF BOTH FORMATTED AND UNFORMATTED DATA WAS PROPOSED AS RESPONSIVE TO THE GENERALLY FELT NEED BY DATA GENERATORS AND USERS FOR MORE ORDERLY 'BOOKKEEPING' IN THE HUMAN FACTORS REALM. DESIRABLE CHARACTERISTICS OF AN AUTOMATED HUMAN FACTORS TASK DATA HANDLING SYSTEM W RE DERIVED FROM THE QUESTIONNAIRE RESPONSES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-623 157
FMC CORP SANTA CLARA CALIF CENTRAL ENGINEERING LABS

ACCURACY OF SOURCE DATA HUMAN ERROR IN HAND TRANSCRIPTION. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR 1 APR 64-31 MAR 65,
MAY 65 275P MCARTHUR,BRUCE N. ;
REPT. NO. FMC-R-2234
CONTRACT: AF33 615 1276
PROJ: 1523
TASK: 152306
MONITOR: ASD , TR-65-10

UNCLASSIFIED REPORT

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

DESCRIPTORS: (*COMPUTER PROGRAMMING, ERRORS), (*ERRORS, HUMANS), (*HUMAN FACTORS ENGINEERING, COMPUTER PROGRAMMING), DATA PROCESSING, CHARACTER RECOGNITION, NUMBERS, ITERATIONS, PROGRAMMING LANGUAGES, FACTOR ANALYSIS, PERFORMANCE(HUMAN), STATISTICAL ANALYSIS, GRAPHICS, TABLES(DATA) (U)

AN EXPERIMENTAL HUMAN FACTORS STUDY OF HUMAN ERROR IN HAND TRANSCRIPTION WAS PERFORMED. THE OBJECTIVES WERE TO DETERMINE UNDER LABORATORY CONDITIONS, THE EFFECTS ON TRANSCRIPTION ACCURACY OF CERTAIN HUMAN FACTORS, SOURCE, DATA FACTORS, TASK FACTORS AND ENVIRONMENTAL CONDITIONS. THE FACTORS WERE SUBJECT AGE, SEX AND OCCUPATION, ARRANGEMENT OF CODES, AND CODE CONTENT AND STRUCTURE, TRANSCRIPTION METHOD AND FORM DESIGN, AND WORK PERIOD DURATION. THE GENERAL FINDINGS WERE AGE AND SEX ARE SIGNIFICANT FACTORS IN HAND TRANSCRIPTION ACCURACY, THE AGE FACTOR INTERACTS SIGNIFICANTLY WITH CODE CONTENT, THE SEX AND OCCUPATION FACTORS INTERACT SIGNIFICANTLY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-623 619
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

APPLICATION OF BEHAVIORAL SCIENCE TO PERFORMANCE AID DEVELOPMENT. (U)

DESCRIPTIVE NOTE: STATE-OF-THE-ART REPT.,
AUG 65 20P TOPMILLER,DONALD A. ;
REPT. NO. AMRL-TR-65-146
PROJ: 7184
TASK: 718406

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, DISPLAY SYSTEMS), (*DATA PROCESSING, HUMAN FACTORS ENGINEERING), (*INSTRUCTION MANUALS, HUMAN FACTORS ENGINEERING), NUMBERS, MAINTENANCE, MAINTAINABILITY, FAILURE, AIR FORCE EQUIPMENT, SPECIFICATIONS, SYSTEMS ENGINEERING, CHECKOUT PROCEDURES, SIMULATION, DESIGN (U)

FOUR CLASSES OF VARIABLES RELEVANT TO BEHAVIORAL RESEARCH ON THE DEVELOPMENT OF PERFORMANCE AIDS (TECHNICAL ORDERS, MAINTENANCE MANUALS, ETC.) ARE OUTLINED: (A) LEGIBILITY AND FORMAT VARIABLES; (B) VARIABLES ASSOCIATED WITH PROCESSING PRINTED NUMERIC INFORMATION; (C) VARIABLES ASSOCIATED WITH THE PHYSICAL CONFIGURATION OF PERFORMANCE AIDS; AND, (D) VARIABLES ASSOCIATED WITH TROUBLESHOOTING INFORMATIONAL PROCESSING AND DISPLAY SYSTEMS. EACH OF THESE TOPICS IS DISCUSSED WITHIN A HISTORICAL FRAMEWORK, WITH SUPPORTING EMPIRICAL RESEARCH. SOME PREDICTIONS ARE MADE FOR FUTURE TRENDS IN PERFORMANCE-AID BEHAVIORAL STUDIES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-628 206 5/2 5/5
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

HUMAN ENGINEERING THE GPDS/LUCID SYSTEM: CONSIDERATIONS AND PLANS. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
NOV 65 30P SIMON,CHARLES W. ;
REPT. NO. TM-2776,
CONTRACT: AF 19(628)-5166,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INFORMATION RETRIEVAL, DISPLAY SYSTEMS), (*HUMAN FACTORS ENGINEERING, INFORMATION RETRIEVAL), DATA, DATA STORAGE SYSTEMS, SYSTEMS, PROGRAMMING LANGUAGES (U)
IDENTIFIERS: LUCID LANGUAGE, ON-LINE SYSTEMS, USER NEEDS (U)

HUMAN ENGINEERING CONSIDERATIONS AND PLANS FOR THE STUDY AND EVALUATION OF THE GPDS/LUCID SYSTEM ARE DISCUSSED. SPECIFIC PROJECT GOALS ARE: (1) TO DETERMINE HOW WELL THE CURRENT SYSTEMS MATCH USERS' NEEDS, AND (2) TO MAKE RECOMMENDATIONS FOR IMPROVING THE SYSTEM WHERE THESE NEEDS ARE NOT MET. AN ULTIMATE PROJECT GOAL WILL BE TO DETERMINE HUMAN ENGINEERING DESIGN PRINCIPLES USEFUL FOR THE DEVELOPMENT OF USER-ORIENTED, ON-LINE INFORMATION PROCESSING SYSTEMS IN GENERAL. PROJECT INVESTIGATION WILL EXAMINE THE GPDS/LUCID SYSTEMS FROM THE POINT OF VIEW OF A USER WHO IS ESSENTIALLY UNSOPHISTICATED IN COMPUTER PROGRAMMING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-631 182 5/8 5/5 22/2 9/2
COMPUTER CONCEPTS INC LOS ANGELES CALIF

THE ROLE OF COMPUTERS IN HANDLING AEROSPACE SYSTEMS HUMAN FACTORS TASK DATA. (U)

DESCRIPTIVE NOTE: FINAL REPT. 3 JUN 64-. JUN 65, DEC 65 183P WHITEMAN,IRVIN R. ;
CONTRACT: AF 33(615)-1557,
PROJ: AF-1710,
TASK: 171006,
MONITOR: AMRL , TR-65-206

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-621 379.

DESCRIPTORS: (*DATA PROCESSING, HUMAN), (*HUMAN FACTORS ENGINEERING, WEAPON SYSTEMS), (*SPACE FLIGHT, SYSTEMS ENGINEERING), (*AIR FORCE, SYSTEMS ENGINEERING), MANAGEMENT ENGINEERING, PERSONNEL MANAGEMENT, DECISION MAKING, AUTOMATION, INFORMATION RETRIEVAL, SUPERVISORS, COMPUTERS, DATA STORAGE SYSTEMS, PERFORMANCE(HUMAN), GROUND SUPPORT EQUIPMENT (U)

THE CHARACTERISTICS OF A COMPUTER BASED DATA SYSTEM FOR HANDLING HUMAN FACTORS TASK INFORMATION GENERATED IN SUPPORT OF ADVANCED SYSTEM DEVELOPMENT ARE DESCRIBED. ON THE BASIS OF INFORMATION GATHERED FROM USERS AND GENERATORS OF DATA AT REPRESENTATIVE GOVERNMENT AND CONTRACTOR INSTALLATIONS, THE CURRENT AND POTENTIAL USES OF COMPUTERS WERE ASSESSED TO DETERMINE THE DESIRABLE CHARACTERISTICS FOR A COMPUTERIZED HUMAN FACTORS TASK DATA HANDLING SYSTEM. THE PROPOSED DATA HANDLING SYSTEM WILL ASSIST HUMAN FACTORS SPECIALIST AND SYSTEM DESIGN ENGINEERS IN THE DESIGN AND DEVELOPMENT OF SYSTEMS BY PROVIDING THEM WITH MEANS FOR: (1) DRAWING THEM CLOSER TO THE DATA THROUGH A USER-ORIENTED SYSTEM, (2) COMPARING DATA GENERATED THROUGHOUT THE LIFE-CYCLE OF AN ADVANCED SYSTEM AND ACROSS SYSTEMS, (3) ANALYZING DATA AND CONDUCTING MAN-MACHINE SIMULATIONS, AND (4) INSURING THAT DATA ARE MADE AVAILABLE ON A SELECTIVE QUERY AND A TIMELY BASIS. THESE OBJECTIVES ARE MET WITHIN THE FRAMEWORK OF A DATA SYSTEM CONCEPT REFERRED TO AS CENTRAL. THE FUNCTIONS OF CENTRAL ARE: (1) DATA STORAGE AND RETRIEVAL, (2) DATA PROCESSING, (3) COMPUTER PROGRAM MAINTENANCE, AND (4) SYSTEM OPERATIONAL MANUAL MAINTENANCE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-631 465 9/3 17/2 5/9
WESTON INSTRUMENTS INC NEWARK N J

STUDY OF ELECTROLUMINESCENT DISPLAY TECHNIQUES AND EVALUATION OF A THIN FILM CROSS-GRID DISPLAY PANEL. (U)

DESCRIPTIVE NOTE: FINAL REPT. AUG 64-SEP 65,
DEC 65 53P LAKSHMANAN,T. K. ;MUNT,I. ;
CONTRACT: AF 33(615)-1876,
PROJ: AF-6114,
TASK: 611410,
MONITOR: AMRL , TR-65-166

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DISPLAY SYSTEMS, *ELECTROLUMINESCENCE), FILMS, STATE-OF-THE-ART REVIEWS, MANUFACTURING, RESOLUTION, BRIGHTNESS, LIFE EXPECTANCY, SIMULATION, HUMAN FACTORS ENGINEERING, CIRCUITS, COMPUTERS, TRAINING DEVICES (U)
IDENTIFIERS: ELECTROLUMINESCENCE, PANELS, THIN FILMS (U)

A STUDY WAS CONDUCTED OF THE STATE-OF-THE-ART OF ELECTROLUMINESCENT DISPLAY TECHNIQUES APPLICABLE TO SIMULATION OF ON-BOARD DISPLAYS OF FUTURE VEHICLES AND DISPLAYING COMPUTER AND/OR VIDEO INFORMATION FOR USE IN TRAINING DEVICES. AN EVALUATION WAS MADE OF THE VARIOUS FABRICATION TECHNIQUES TO DETERMINE THE ONE WITH GREATEST POTENTIAL FOR PRODUCING A HIGH RESOLUTION, BRIGHT CROSS-GRID TYPE PANEL DISPLAY. A THIN FILM CROSS-GRID PANEL, 9 IN. X 9 IN. WITH 258 X 258 LINES WAS FABRICATED AND EVALUATED TO DETERMINE OPERATIONAL CHARACTERISTICS AND LIMITATIONS. SOME BASIC CONSIDERATIONS WERE GIVEN TO DRIVING ELECTRONICS TO DETERMINE DESIGNS FOR MAXIMUM FLEXIBILITY FOR COMPUTER GENERATED INPUTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-631 781 15/7 5/10 9/2
OHIO STATE UNIV COLUMBUS HUMAN PERFORMANCE CENTER

FURTHER INVESTIGATION OF THE EFFECTS OF REDUCED INPUT DATA FIDELITY UPON THE DETERMINATION OF POSTERIOR PROBABILITIES IN A SIMULATED THREAT-DIAGNOSIS SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT., 15 MAR-1 AUG 64, DEC 65 21P SCHUM,DAVID A. ;GOLDSTEIN, IRWIN L. ;SOUTHARD,JACK F. ;
CONTRACT: AF 33(657)-10763,
PROJ: AF-7184,
TASK: 718403,
MONITOR: AMRL , TR-65-233

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-607 256, -608 108, -615 758.

DESCRIPTORS: (*THREAT EVALUATION, *DECISION MAKING), (*STATISTICAL ANALYSIS, MILITARY INTELLIGENCE), COMPUTERS, SIMULATION, PROBABILITY, MATHEMATICAL PREDICTION, HUMAN FACTORS ENGINEERING, DATA PROCESSIN(U)
IDENTIFIERS: BAYES THEOREM (U)

THIS IS THE FIFTH IN A SERIES OF EXPERIMENTS ON BAYESIAN DIAGNOSTIC SYSTEMS. IN THIS EXPERIMENT TWO PROCEDURES FOR OBTAINING A POSTERIORI (P (H/D)) PROBABILITY ESTIMATES WERE COMPARED UNDER CONDITIONS OF LOW FIDELITY OF INPUT DATA AND VARIOUS LEVELS OF TIME-STRESS. IN ONE PROCEDURE A COMPUTER AGGREGATED THE SUBJECTS' A PRIORI (P (D/H)) ESTIMATES. IN THE ALTERNATE PROCEDURE THE A POSTERIORI PROBABILITIES WERE ESTIMATED BY THE SUBJECTS WITHOUT COMPUTER AID. THE RESULTS FAVOR THE COMPUTER-AIDED PROCEDURE AND TEND TO SUPPORT THE USE OF AUTOMATED BAYESIAN HYPOTHESIS-SELECTION PROCEDURES IN DIAGNOSTIC SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-634 313 15/3 17/2 5/5
ARMY PERSONNEL RESEARCH OFFICE WASHINGTON D C

HUMAN FACTORS RESEARCH IN COMMAND INFORMATION PROCESSING SYSTEMS, (U)

DESCRIPTIVE NOTE: TECHNICAL RESEARCH REPT.,
MAR 66 27P RINGEL,SEYMOUR ;VICINO,F.
L. ;ANDREWS,R. S. ;
REPT. NO. APRO-TRR-1145
PROJ: DA-2-J-024701-A-723

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMMAND AND CONTROL SYSTEMS, DECISION MAKING), (*COMBAT INFORMATION CENTERS, *HUMAN FACTORS ENGINEERING), DATA PROCESSING, DISPLAY SYSTEMS, MILITARY REQUIREMENTS, MILITARY TACTICS, COMPUTERS, INFORMATION RETRIEVAL (U)

THE REPORT DESCRIBES THE SCOPE, RATIONALE, ORGANIZATION, AND PROGRESS OF A COMMAND SYSTEMS RESEARCH PROGRAM TO PROVIDE HUMAN FACTORS INFORMATION NEEDED FOR PERFORMANCE WITHIN COMPLEX AUTOMATED INFORMATION PROCESSING SYSTEMS. FOLLOWING A SURVEY OF MILITARY INFORMATION PROCESSING EQUIPMENT AND OPERATIONS AND FUTURE PLANS FOR COMMAND INFORMATION PROCESSING SYSTEMS, BASIC HUMAN FACTORS PROBLEMS WERE IDENTIFIED AND ORGANIZED AROUND FIVE CRITICAL OPERATIONS--SCREENING INCOMING DATA, TRANSFORMING RAW DATA FOR INPUT INTO STORAGE DEVICES, INPUT, ASSIMILATION OF DISPLAYED INFORMATION, AND DECISION MAKING. A RESEARCH PROGRAM WAS FORMULATED AND STUDIES UNDERTAKEN TO YIELD EMPIRICAL INFORMATION ABOUT THE EFFECTS ON HUMAN PERFORMANCE OF (1) CHARACTERISTICS OF THE INFORMATION PRESENTED (DENSITY, AMOUNT, ETC.); (2) DYNAMIC ASPECTS OF INFORMATION (TYPE, EXTENT, CODING OF UPDATES); (3) DISPLAY MODES AND SENSORY MODALITIES (GROUP VS INDIVIDUAL DISPLAYS, MULTISENSORY DISPLAYS); AND (4) COMPUTER AIDS TO THE DECISION PROCESS. A COMMAND SYSTEMS LABORATORY WAS DEVELOPED TO PERMIT SIMULATION OF VARIOUS TOS FUNCTIONS. FINDINGS HAVE SUGGESTED THE POSSIBILITY OF REDUCTION IN STORAGE CAPACITY REQUIREMENTS, NUMBER OF DISPLAYS CALLED FROM STORAGE DURING A GIVEN OPERATIONAL TIME PERIOD, AND TIME REQUIRED FOR THE TOTAL INFORMATION ASSIMILATION-DECISION PROCESS AND SUPPORTED THE INCORPORATION AND USE OF INFORMATION CONSPICUITY CODING CAPABILITIES IN COMMAND SYSTEMS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-636 170 5/5 5/8 9/2
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA RESEARCH AND ENGINEERING SUPPORT DIV

HUMAN FACTORS PROBLEMS IN COMPUTER-GENERATED GRAPHIC DISPLAYS. (U)

APR 66 118P BARMACK, JOSEPH E. ;SINAIKO, H. WALLACE ;
REPT. NO. IDA/HQ-66-4820,STUDY S-234
CONTRACT: SD-50,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, DISPLAY SYSTEMS), (*DISPLAY SYSTEMS, GRAPHICS), COMPUTERS, MAN MACHINE SYSTEMS, INPUT OUTPUT DEVICES, THEORY, LIGHT, COLORS (U)

THE STUDY IS A REVIEW OF CURRENT PRACTICES IN COMPUTER-GENERATED GRAPHIC DISPLAYS FROM THE POINT OF VIEW OF ENGINEERING PSYCHOLOGY. INPUT DEVICES, WHICH ARE INTEGRAL TO MAN-COMPUTER SYSTEMS, ARE ALSO CONSIDERED. THEORIES OF COGNITION ARE EXAMINED WITH RESPECT TO THEIR APPLICABILITY TO COMPUTER-GRAPHICS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-636 313 6/4 9/2
SYSTEM RESEARCH LTD RICHMOND (ENGLAND)

A CYBERNETIC MODEL OF HUMAN DATA PROCESSING. (U)

64 16P PASK, GORDON ;
CONTRACT: AF 61(052)-640,AF 61(052)-402

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE PROCEEDINGS OF THE INTERNATIONAL UNION OF PHYSIOLOGICAL SCIENCES. INTERNATIONAL CONGRESS (22ND) IN LEIDEN, 1962 P218-33.

DESCRIPTORS: (•CYBERNETICS, BEHAVIOR), (•BIONICS, BEHAVIOR), HUMANS, DATA PROCESSING, LEARNING, MAN MACHINE SYSTEMS, GREAT BRITAIN (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-637 814 5/2 5/5 15/7
ARMY PERSONNEL RESEARCH OFFICE WASHINGTON D C

COMMAND INFORMATION PROCESSING SYSTEMS: A HUMAN FACTORS RESEARCH PROGRAM. (U)

DESCRIPTIVE NOTE: TECHNICAL RESEARCH REPT.
JUN 66 38P RINGEL,SEYMOUR ;
REPT. NO. APRO-TRR-1148
PROJ: DA-2-J-024701-A-723

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INFORMATION RETRIEVAL, ARMY OPERATIONS), (*HUMAN FACTORS ENGINEERING, INFORMATION RETRIEVAL), TACTICAL WARFARE, DATA PROCESSING, COMMAND AND CONTROL SYSTEMS, MAN MACHINE SYSTEMS, COMPUTERS, MILITARY STRATEGY, DECISION MAKING, SYSTEMS ENGINEERING (U)

THE COMMAND SYSTEMS TASK SEEKS TO DEVELOP RESEARCH INFORMATION BY WHICH THE EFFECTIVENESS OF CURRENT AND FUTURE COMMAND INFORMATION PROCESSING SYSTEMS MAY BE MAXIMIZED, PURSUING ITS OBJECTIVE THROUGH INTENSIVE EXPERIMENTATION IN SPECIFIC ARMY MAN-MACHINE COMPLEXES. THE PRESENT PUBLICATION DESCRIBES THE SCOPE, RATIONALE, AND ORGANIZATION OF A RESEARCH PROGRAM TO PROVIDE THAT INFORMATION TO DESIGNERS, DEVELOPERS, AND USERS. THE PROGRAM REPRESENTS A COMPREHENSIVE APPROACH TO RESEARCH CONCERNED WITH AUTOMATED COMMAND INFORMATION PROCESSING SYSTEMS, RANGING FROM DETAILED STUDIES OF DISCRETE HUMAN FUNCTIONS TO INTEGRATION OF SIZABLE HIGHLY AUTOMATED COMPUTERIZED SYSTEMS. TASK EFFORT FOR THE PRESENT AND IN THE IMMEDIATE FUTURE WILL BE CONCENTRATED ON STUDIES DEALING WITH INFORMATION ASSIMILATION AND DECISION MAKING. THE REPORT DELINEATES A SERIES OF STUDIES IN PROGRESS OR PROJECTED ON NINE MAJOR ASPECTS OF THESE FUNCTIONS: (1) AMOUNT AND DENSITY OF INFORMATION; (2) SPECIFICITY OF INFORMATION; (3) ALPHA-NUMERIC AND SYMBOLIC PRESENTATION; (4) TYPE, EXTENT, AND RATE OF INFORMATION UPDATING; (5) CODING OF UPDATED INFORMATION AND HARD COPY; (6) SEQUENCE OF INFORMATION PRESENTATION; (7) INDIVIDUAL AND GROUP WORK METHODS AND DISPLAYS; (8) VISUAL AND AUDITORY DISPLAYS; (9) COMPUTER-AIDED PERFORMANCE. RESEARCH TO BE ACCOMPLISHED IN REMAINING SUBTASKS CONCERNED WITH PROBLEMS IN THE INFORMATION PREPARATION AND SYSTEM INTEGRATION AREAS IS MORE GENERALLY DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-640 283 5/2 5/8 9/2
INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N Y DATA SYSTEMS DIV

PSYCHOLOGY FOR A MAN-MACHINE PROBLEM-SOLVING SYSTEM. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
FEB 65 22P MILLER,ROBERT B. ;
REPT. NO. TR-00.1246,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PROBLEM SOLVING, MAN MACHINE SYSTEMS), (*INFORMATION RETRIEVAL, MAN MACHINE SYSTEMS), COMPUTERS, HUMAN FACTORS ENGINEERING, SUBJECT INDEXING, PSYCHOLOGY (U)

THE PAPER DEALS WITH THE USE OF COMPUTER CAPABILITIES TO EXTEND HUMAN CAPABILITIES FOR INVENTION AND DISCOVERY. A PROGRAMMATIC ROUTE IS PROPOSED FOR DEVELOPMENT. THE FIRST STAGE IN THIS ROUTE IS AN ANALYTIC ENUMERATION OF HUMAN ABILITIES AND LIABILITIES AS A PROBLEM-SOLVING MECHANISM. THE SECOND STAGE WILL DEAL WITH AN ANALYSIS OF HUMAN INFORMATION-HANDLING TASKS. THESE TWO STAGES SHOULD ILLUMINATE SYSTEM OBJECTIVES, WHILE AT THE SAME TIME OPTIONS FOR DESIGNING THE MAN-MACHINE PROBLEM-SOLVING ENTITY BECOME CLARIFIED. THE RESULT WILL BE AN INTELLIGENCE-RETRIEVAL SYSTEM COMBINED WITH LOGICAL AND EXTRAORDINARY DISPLAY CAPABILITIES. THE PRINCIPAL DESIGN ISSUES WILL BE REVEALED AS INDEXING CONTENT AND STRUCTURE AND DISPLAY SYMBOLOGIES. AN IMPORTANT (AND NEGLECTED) DIMENSION IN SYSTEM DESIGN IS THE HUMAN'S ABILITY TO LEARN AND THINK IN NEW LANGUAGES AND SYMBOLOGIES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-644 636 1/4 5/5
BUNKER-RAMO CORP CANOGA PARK CALIF DEFENSE SYSTEMS DIV

HUMAN ENGINEERING SUPPORT TO AIR FORCE FLIGHT CONTROL AND FLIGHT DISPLAY INTEGRATION PROGRAM. (U)

DESCRIPTIVE NOTE: FINAL REPT., 14 MAR-24 JUN 66,
OCT 66 50P RABIDEAU,GERALD F. ;SEMPLE, CLARENCE A. ;
CONTRACT: AF 33(615)-3757
PROJ: AF-6190
TASK: 619007
MONITOR: AFFDL TR-66-157

UNCLASSIFIED REPORT

DESCRIPTORS: (*FLIGHT CONTROL SYSTEMS, HUMAN FACTORS ENGINEERING), (*DISPLAY SYSTEMS, AIRCRAFT), COCKPITS, VISIBILITY, INFORMATION RETRIEVAL, AIR FORCE RESEARCH, SHORT TAKEOFF AIRCRAFT, ALTIMETERS (U)

AMONG THE RESEARCH OUTPUTS WERE (1) A HEAD-UP DISPLAY LITERATURE SEARCH AND ANALYSIS, AND (2) EXPERIMENTAL DESIGN FOR DYNAMIC (OPEN-LOOP) STUDY OF MOVING TAPE SCALE VARIABLES. AMONG THE CONTINUING RESEARCH TASKS WERE: (1) VISUAL REQUIREMENTS IN COCKPIT DISPLAYS UNDER LOW AMBIENT ILLUMINATION, (2) SWITCH TYPE AND LOCATION EVALUATION FOR CONTROL YOKE, (3) V/STOL LANDING DISPLAY LITERATURE SEARCH, AND (4) CONTROL-DISPLAY INFORMATION CENTER SUBJECTIVE INDEX DEVELOPMENT. ADDITIONALLY, THE MORE EXTENSIVE CONSULTING TASKS INCLUDED: (1) V/STOL PROGRAM DEVELOPMENT, (2) ADVANCED MULTIPURPOSE SPACECRAFT DISPLAY STUDY, (3) V/STOL PANEL AND COCKPIT MOCKUP SUPPORT, AND (4) ELECTROLUMINESCENT ALTIMETER DESIGN CONCEPT EVALUATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-645 653 9/2 5/5
NAVY ELECTRONICS LAB SAN DIEGO CALIF

HUMAN FACTORS IN THE DESIGN OF AN OBSERVER'S KEYSET. (U)

DESCRIPTIVE NOTE: RESEARCH REPT., JAN-AUG 66,
OCT 66 40P GALLO,P. S. ;LEVINE,J. R. ;
REPT. NO. NEL-1411
PROJ: SR-006-09-02
TASK: 11281(NEL N51461)

UNCLASSIFIED REPORT

DESCRIPTORS: (*INPUT OUTPUT DEVICES, *HUMAN FACTORS ENGINEERING), DESIGN, PUNCHED TAPE, COMPUTERS, RECORDING SYSTEMS, DATA TRANSMISSION SYSTEMS (U)

THE REPORT DESCRIBES AN INVESTIGATION OF THE EFFECTS OF CHANGES IN A NUMBER OF DESIGN CHARACTERISTICS AND OTHER VARIABLES ON OPERATION WITH KEYSETS USED TO RECORD INFORMATION IN BINARY NOTATION FROM STIMULUS DISPLAYS THAT CONTAIN A MAXIMUM OF FIVE BITS OF INFORMATION PER STIMULUS. PRINCIPAL RESULT WAS A DEMONSTRATION OF SUPERIORITY IN TRANSMISSION AND ERROR RATES OF FIVE-KEY PATTERN ENTRY OVER TWO-KEY SEQUENTIAL ENTRY. OTHER VARIABLES TESTED WERE LESS SIGNIFICANT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-646 960 5/8 5/10 9/4
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

ENGINEERING PSYCHOLOGY, (U)

OCT 66 719P LEONTEVA,A. N. ;ZINCHENKO, V. P. ;PANOVA,D. YU. ;
REPT. NO. FTD-HT-66-147
MONITOR: TT 67-61001

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROGH DRAFT TRANS. OF MONO. INZHENERNAYA PSIKHOLOGIYA, MOSCOW, 1964 396P.

DESCRIPTORS: (*MAN MACHINE SYSTEMS, APPLIED PSYCHOLOGY), INFORMATION THEORY, ELECTROPHYSIOLOGY, HUMAN FACTORS ENGINEERING, PERCEPTION(PSYCHOLOGY), PSYCHOPHYSIOLOGY, AUTOMATION, BRAIN, AUDITORY PERCEPTION, VISUAL PERCEPTION, MEMORY(PSYCHOLOGY), MOTOR REACTIONS, NOISE, PERFORMANCE(HUMAN), USSR (U)

THE PROBLEMS OF ENGINEERING PSYCHOLOGY, AUTOMATION, AND THE BASIC THEORIES OF INFORMATION THEORY, OF THE SYSTEM OF ABSTRACTIONS USED IN IT, AND OF THE CONDITIONS OF ITS APPLICABILITY IN PSYCHOLOGY ARE DISCUSSED. THE DETAILED DYNAMICS OF PERCEPTION ARE EXAMINED IN ORDER TO FIND OUT HOW AND BY WHAT MEANS OF WHAT FUNCTIONAL STRUCTURES THE SENSORY CONTENT AND THE ABBREVIATED DESCRIPTION OF THE IDENTIFIED STIMULUS ARE FORMED AND FIXED IN THE FORM OF AN ENSEMBLE OF INVARIANT, MUTUALLY INDEPENDENT PARAMETERS, PERMITTING THE REALIZATION OF SIMULTANEOUS RECOGNITION OR DIFFERENTIATION. A METHOD IS DESCRIBED, BY USING FORMULAS, OF QUANTITATIVE ANALYSIS OF THE PERCEPTION OF SPATIAL AND SPATIO-TEMPORAL RELATIONS. IT IS INDICATED THAT THE OBSERVER IS A PERSON WHO FOLLOWS UP A SYSTEM OF SIGNALS APPEARING AGAINST THE BACKGROUND OF SIDE EFFECTS, WHICH CONSTITUTES INTERFERENCES WITH RESPECT TO THESE SIGNALS. SEVERAL METHODS AND SYSTEMS FOR ANALYZING BRAIN BIOCURRENTS ARE DISCUSSED. THE DISTRIBUTION OF FUNCTIONS BETWEEN MAN AND MACHINE ARE EXAMINED AS WELL AS INTERACTION OF INDIVIDUALS IN THE CONTROL SYSTEM, HUMAN THROUGHPUT CAPACITY, BASIC FEATURES OF HUMAN OPERATOR ACTIVITY, STATE OF RECEPTION AND CODING OF INFORMATION, AND BASIC TYPES OF OPERATOR ACTIVITY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-647 993 5/2 5/5
SYSTEM DEVELOPMENT CORP DAYTON OHIO

DEVELOPMENT AND APPLICATION OF COMPUTER SOFTWARE TECHNIQUES TO HUMAN FACTORS TASK DATA HANDLING PROBLEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 21 JUN 65-21 JUN 66, DEC 66 175P POTTER,K. W. ;TULLEY,A. T. ;REED,LAWRENCE E. ;
CONTRACT: AF 19(628)-3418
PROJ: AF-1710
TASK: 171006
MONITOR: AMRL TR-66-200

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: JOINT NASA/USAF STUDY.

DESCRIPTORS: (*DATA PROCESSING, *HUMAN FACTORS ENGINEERING), INFORMATION RETRIEVAL, COMPUTERS, CLASSIFICATION, VOCABULARY, DATA STORAGE SYSTEMS (U)

RESEARCH LEADING TO THE APPLICATION OF COMPUTER SOFTWARE TECHNIQUES FOR HANDLING HUMAN FACTORS TASK DATA GENERATED IN SUPPORT OF AEROSPACE SYSTEM DEVELOPMENT PROGRAMS IS DISCUSSED. IT IS RECOGNIZED THAT DATA HANDLING TECHNIQUES MUST BE DEVELOPED IN CONTEXT WITH THEIR TOTAL OPERATIVE ENVIRONMENT. A CONCEPT OF AN OPERATIONAL DATA MANAGEMENT SYSTEM FOR STORING, PROCESSING, AND RETRIEVING HUMAN FACTORS TASK DATA IN A GOVERNMENT/CONTRACTOR ENVIRONMENT IS DISCUSSED AND ILLUSTRATED. THIS CONCEPT IS PREDICATED ON THE ASSUMPTION THAT A USER-ORIENTED COMPUTERIZED DATA SYSTEM WILL HELP DRAW HUMAN FACTORS SPECIALISTS CLOSER TO THEIR DATA. FIVE PROBLEM AREAS, CONSIDERED TO BE FUNDAMENTAL TO THE DEVELOPMENT OF DATA HANDLING TECHNIQUES, WERE RESEARCHED. THESE AREAS ARE: (1) ANALYSIS OF HUMAN FACTORS TASK DATA, DATA RELATIONSHIPS, AND CLASSIFICATION SCHEMES, (2) APPLICATION OF VOCABULARY AND THESAURUS TECHNIQUES TO INCREASE THE EFFECTIVENESS OF COMMUNICATION AMONG MAN/MACHINE/SOFTWARE FUNCTIONS, (3) APPLICATION OF COMPUTER STORAGE AND RETRIEVAL TECHNIQUES TO HUMAN FACTORS TASK DATA, (4) APPLICATION OF ANALYTICAL AND SIMULATION TECHNIQUES TO HUMAN FACTORS TASK DATA, AND (5) APPLICATION OF CURRENT AWARENESS TECHNIQUES TO PROVIDE NOTIFICATIONS OF DATA AVAILABILITY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-650 791 5/10
NAVAL MATERIAL COMMAND WASHINGTON D C

SYMPOSIUM ON HUMAN PERFORMANCE QUANTIFICATION IN SYSTEMS EFFECTIVENESS, JANUARY 17-18, 1967, WASHINGTON, D. C. (PROCEEDINGS). (U)

67 338P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH NATIONAL ACADEMY OF ENGINEERING, WASHINGTON, D. C.

DESCRIPTORS: (*PERFORMANCE(HUMAN), NAVAL PERSONNEL), (*SYSTEMS ENGINEERING, SYMPOSIA), EFFECTIVENESS, MAN MACHINE SYSTEMS, NAVAL RESEARCH, HUMAN FACTORS ENGINEERING, BEHAVIOR, OPERATIONS RESEARCH, SIMULATION, PREDICTIONS, 9COMPUTERS, RELIABILITY (U)

THE SYMPOSIUM WAS ORGANIZED TO BRING TOGETHER A GROUP OF ENGINEERS AND SCIENTISTS FROM MANY SECTIONS OF THE COUNTRY WHO HAVE BEEN ACTIVELY INVESTIGATING THE RELATIONSHIP OF HUMAN OPERATORS TO THE EFFECTIVENESS OF COMPLEX MAN/MACHINE SYSTEMS. THE SPECIFIC OBJECTIVES OF THE SYMPOSIUM WERE TO: REVIEW AND EVALUATE CURRENT AND PROPOSED METHODS FOR QUANTIFYING MAN'S ROLE IN THE PERFORMANCE OF COMPLEX MAN/MACHINE SYSTEMS. ACQUAINT THE ENGINEERING COMMUNITY AND PARTICULARLY SCIENTISTS AND ENGINEERS WITHIN THE NAVY WITH THE PROBLEMS AND PAYOFFS RELATED TO QUANTIFICATION OF HUMAN PERFORMANCE IN NAVY SYSTEMS. DEVELOP A SET OF RECOMMENDATIONS FOR APPLICATION BY THE NAVAL MATERIAL COMMAND AND OTHER ENGINEERING DEVELOPMENT ORGANIZATIONS TO ENSURE CONSIDERATION, DURING ALL PHASES OF SYSTEM DEVELOPMENT, OF HUMAN CONTRIBUTION TO SYSTEM PERFORMANCE EFFECTIVENESS. THESE OBJECTIVES HAVE BEEN ATTAINED THROUGH THE EFFORTS OF THOSE WHO HAVE CONDUCTED RESEARCH AND DEVELOPMENT ACTIVITIES AND REPORTED THEM HERE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-650 918 4/2
SYLVANIA ELECTRONIC SYSTEMS EAST WALTHAM MASS APPLIED RESEARCH LAB

AN INVESTIGATION OF HUMAN PROCESSING OF INFORMATION IN WEATHER FORECASTING. (U)

DESCRIPTIVE NOTE: FINAL REPT., 15 MAY 65-14 NOV 66, JAN 67 152P DEVOE,DONALD B. ;
REPT. NO. F-5151-1
CONTRACT: AF 19(628)-5176
PROJ: AF-7682
TASK: 768203
MONITOR: ESD TR-67-218

UNCLASSIFIED REPORT

DESCRIPTORS: (*WEATHER FORECASTING, SYSTEMS ENGINEERING), (*MAN MACHINE SYSTEMS, WEATHER STATIONS), DATA PROCESSING, SIMULATION, DISPLAY SYSTEMS, HUMAN FACTORS ENGINEERING, EFFECTIVENESS, DECISION MAKING (U)

AS AN APPROACH TO THE ANALYSIS OF HUMAN FUNCTIONS IN COMPLEX SYSTEMS, TECHNIQUES WERE DEVISED AND TESTED FOR ANALYZING INFORMATION PROCESSING BY WEATHER FORECASTERS. THE FIELD INTERVIEW AS A SOURCE OF INFORMATION ON THE UTILIZATION OF CENTRALLY-PREPARED AIDS TO FORECASTING WAS EVALUATED AT TWO AIR FORCE WEATHER STATIONS. THE PRESENTATION OF WEATHER INFORMATION VIA A FORECASTER'S CONSOLE WAS SIMULATED IN THE LABORATORY AND TESTED EXPERIMENTALLY BOTH AS A MEANS FOR ANALYZING INFORMATION PROCESSING BY FORECASTERS AND AS A TEST BED FOR EVALUATING NEW APPROACHES TO THE DISPLAY OF WEATHER INFORMATION. THE RESULTS OF THE INTERVIEWS AND THE EXPERIMENT ARE DISCUSSED REGARDING THEIR IMPLICATIONS FOR WEATHER FORECASTING AND FOR RESEARCH METHODOLOGY, AND FURTHER STUDIES ARE RECOMMENDED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-654 624 9/2 5/1
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

EXPERIMENTAL INVESTIGATION OF USER PERFORMANCE IN TIME-SHARED COMPUTING SYSTEMS: RETROSPECT, PROSPECT, AND THE PUBLIC INTEREST. (U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
MAY 67 105P SACKMAN,H. ;
REPT. NO. SP-2846
CONTRACT: F19628-67-C-0004

UNCLASSIFIED REPORT

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

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

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-655 375 5/8 13/8 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE ENGINEERING PROJECTS LAB

A COMPUTER SIMULATION EXPERIMENT OF SUPERVISORY CONTROL OF REMOTE MANIPULATION. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 67 76P MCANDLISH,SIMON G. ;
REPT. NO. DSR-79960-5
CONTRACT: AF 19(628)-3317
PROJ: AF-7682
TASK: 768204
MONITOR: ESD TR-67-290

UNCLASSIFIED REPORT

DESCRIPTORS: (*AUTOMATION, *MAN MACHINE SYSTEMS), (*DECISION MAKING, HUMAN FACTORS ENGINEERING), (*COMPUTERS, SIMULATION), REAL TIME, SUBROUTINES, DISPLAY SYSTEMS, CONTROL, INPUT OUTPUT DEVICES (U)

THE LONG TERM AIM OF THIS WORK IS THE MODELING OF THE PROCESS BY WHICH THE HUMAN COMMANDS AND CONTROLS A REAL-TIME INFORMATION SYSTEM CONTAINING AUTOMATIC SUBROUTINES WHICH MAY BE USED TO ACCOMPLISH PORTIONS OF THE TASK. REMOTE MANIPULATION IS BELIEVED TO HAVE ALL THE TYPICAL ATTRIBUTES OF SUCH A SYSTEM YET BE SIMPLE ENOUGH TO BE AMENABLE TO LABORATORY INVESTIGATION. THIS REPORT DESCRIBES A COMPUTER SIMULATION OF A REMOTE MANIPULATION TASK AND RATE-CONTROLLED MANIPULATOR; INTO THE LATTER WAS BUILT SOME LOW-LEVEL AUTOMATIC DECISION MAKING ABILITY WHICH COULD BE USED AT THE OPERATOR'S DISCRETION TO AUGMENT HIS DIRECT CONTINUOUS CONTROL. UNDER EXPERIMENTAL INVESTIGATION WERE THE EFFECT OF TRANSMISSION DELAY, DYNAMIC LAG AND INTERMITTENT VISION ON HUMAN MANIPULATIVE ABILITY. THIS REPORT DESCRIBES FURTHER EXPERIMENTS IN WHICH THE OPERATOR CALLED IN SEQUENCE VARIOUS ON-SITE AUTOMATIC CONTROL PROGRAMS OF THE MACHINE, AND THEREBY ACTED AS A SUPERVISOR. THE RESULTS SUGGEST THAT THE SUPERVISORY MODE OF OPERATION HAS SOME ADVANTAGES WHEN THE TASK TO BE PERFORMED IS DIFFICULT FOR A HUMAN CONTROLLING DIRECTLY. RESULTS SHOW THE SUPERVISORY MODE TO REQUIRE MORE TRAINING THAN THE DIRECT MODE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-656 533 5/8 5/5 5/10
MICHIGAN UNIV ANN ARBOR DEPT OF PSYCHOLOGY

HUMAN INFORMATION-PROCESSING CONCEPTS FOR SYSTEM ENGINEERS, (U)

65 19P PEW,RICHARD W. ;
CONTRACT: AF 49(638)-1235
PROJ: AF-920F-5002
MONITOR: AFOSR 67-1799

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN SYSTEM ENGINEERING HANDBOOK P31-3-31-17 1965.

DESCRIPTORS: (*MAN MACHINE SYSTEMS, SYSTEMS ENGINEERING), (*HUMAN FACTORS ENGINEERING, MAN MACHINE SYSTEMS), MEMORY(PSYCHOLOGY), DECISION MAKING, DATA PROCESSING, PSYCHOPHYSICS, PERCEPTION(PSYCHOLOGY) (U)

A DESIGN PHILOSOPHY IS PRESENTED FOR UTILIZING INFORMATION ABOUT HUMAN PERFORMANCE CAPACITIES AND LIMITATIONS IN THE DESIGN OF MAN-MACHINE SYSTEMS. SPECIFIC DATA CONCERNING MAN'S CAPABILITIES FOR PSYCHOPHYSICAL JUDGMENT, SPEEDED INFORMATION PROCESSING, MEMORY STORAGE AND PERCEPTUALMOTOR SKILLS ARE SURVEYED AND DESCRIBED IN ENGINEERING TERMS WHERE APPLICABLE. THE VEIW OF MAN AS A SINGLE CHANNEL LIMITED CAPACITY INFORMATION PROCESSING SYSTEM IS ADVOCATED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-656 653 5/8 5/5 5/10
MICHIGAN UNIV ANN ARBOR DEPT OF PSYCHOLOGY

RECENT PSYCHOLOGICAL RESEARCH RELEVANT TO THE HUMAN FACTORS ENGINEERING OF MAN-MACHINE SYSTEMS. (U)

65 7P PEW,RICHARD W. ;
CONTRACT: AF 49(638)-1235
PROJ: AF-929F-5002
MONITOR: AFOSR 67-1824

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN PROCEEDINGS OF THE NATIONAL ELECTRONICS CONFERENCE 5P OCT 1965.

DESCRIPTORS: (•MAN MACHINE SYSTEMS, •HUMAN FACTORS ENGINEERING), DESIGN, SYSTEMS ENGINEERING, MEMORY(PSYCHOLOGY), PSYCHOLOGY, BIONICS, DATA PROCESSING, DECISION MAKING (U)

THE EMPHASIS OF THE REPORT WAS TO SURVEY A BODY OF PSYCHOLOGICAL THEORY AND TO ILLUSTRATE A SPECIFIC AREA IN WHICH THE THEORY AND ASSOCIATED EMPIRICAL DATA ARE RELEVANT TO SYSTEM DESIGN PROBLEMS. WITHIN THE FRAMEWORK DESCRIBING MAN AS A SINGLE-CHANNEL INFORMATION PROCESSOR AT LEAST, THERE ARE OTHER EQUALLY RELEVANT BODIES OF DATA. FOR EXAMPLE, RESEARCH ON THE FUNCTIONAL CHARACTERISTICS OF THE MEMORY SUBSYSTEM, ESPECIALLY SHORT-TERM MEMORY ARE AVAILABLE TO ALLOW RELATIVELY PRECISE SPECIFICATIONS OF TOLERABLE MEMORY LOAD, GIVEN THE NATURE OF THE MATERIAL TO BE REMEMBERED. THIS LITERATURE WOULD ALSO SUGGEST INFORMATION FORMAT AND CODING FOR OPTIMUM RECALL OR RETREVAL. SIMILARLY, THE ACCUMULATING BODY OF DATA FOCUSED ON ENGINEERING DESCRIPTIONS OF MAN AS A CONTROLLER IN FEEDBACK SYSTEMS ARE AVAILABLE FOR THOSE WITH PROBLEMS IN THIS AREA. IN SHORT IT IS THE CONTENTION OF THE PAPER THAT ONE SHOULD NOT RETREAT TO THE COMFORT OF HIS ARMCHAIR AND ITS ASSOCIATED INTUITIVE DESIGN TECHNIQUES WITHOUT FIRST MAKING A CONSCIENTIOUS EFFORT TO TALK TO PSYCHOLOGISTS ABOUT HIS PARTICULAR DESIGN PROBLEM AND TO SEEK OUT THE APPLICABLE LITERATURE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-656 701 5/5 5/10 5/9 9/2
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

ADVANCES IN THE USE OF COMPUTERS FOR HANDLING HUMAN FACTORS TASK DATA. (U)

APR 67 16P [illegible]FED,LAWRENCE E. ;

REPT. NO. AMRL-TR-67-16
PROJ: AF-1710
TASK: 171006

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN INTERNATIONAL SIMULATION AND TRAINING CONFERENCE (3RD), NEW YORK, 24-27 APRIL 1967. SUPPORTED BY NASA AND CONTRACT F33615-67-C-1336 WITH THE SYSTEM DEVELOPMENT CORP.

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, *DATA PROCESSING), (*JOB ANALYSIS, HUMAN FACTORS ENGINEERING), SYSTEMS ENGINEERING, TRAINING, COMPUTERS, ANALYSIS, DATA, PERSONNEL MANAGEMENT (U)

THE PURPOSE OF THE PAPER IS TO REVIEW SOME OF THE DATA PROBLEMS THE ANALYST MUST DEAL WITH IN HIS WORK AND TO SUGGEST SOME POSSIBLE REMEDIES. A REVIEW OF THE TASK ANALYSIS PROCEDURES IS FOLLOWED BY A DISCUSSION OF THE USES OF TASK ANALYSIS IN SYSTEM DEVELOPMENT PROGRAMS. PROBLEMS CONNECTED WITH EACH WERE USED TO GENERATE THE GOALS OF A RESEARCH PROGRAM, WHICH IS DIRECTED TOWARD THE DEVELOPMENT OF COMPUTERIZED TECHNIQUES TO ASSIST THE ANALYST MAKE BETTER USE OF AVAILABLE DATA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-658 754 1/3 5/8 5/5
LITTON SYSTEMS INC WOODLAND HILLS CALIF GUIDANCE AND CONTROL SYSTEMS DIV

INTEGRATED COCKPIT RESEARCH PROGRAM. APPENDIX II. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JAN 67 93P MURPHY,JOHN V. ;PIZZICARA, DONALD J. ;BELCHER,JAMES J. ;HAMSON,ROBERT L. ;BERNBERY,RAYMOND E. ;
CONTRACT: NONR-4951(00)
PROJ: NR-213-041

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-658 753.

DESCRIPTORS: (*COCKPITS, SYSTEMS ENGINEERING), COST EFFECTIVENESS, HUMAN FACTORS ENGINEERING, DISPLAY SYSTEMS, PILOTS, AUTOMATIC, DATA PROCESSING, CONTROL, SPECIFICATIONS (U)

THE INTEGRATED COCKPIT RESEARCH PROGRAM WAS DESIGNED TO DEVELOP A METHODOLOGY FOR AVIONIC SYSTEM DESIGN APPLICATION TO AIRCRAFT IN AN ADVANCED TIME PERIOD. EMPHASIS WAS PLACED ON TWO MAJOR ACTIVITIES. ONE WAS CONCERNED WITH IDENTIFYING THE REQUIREMENTS FOR THE OPERATOR/AVIONIC SYSTEM IN THE FUTURE TIME PERIOD, AND A SECOND ACTIVITY WAS CONCERNED WITH IDENTIFYING THE TECHNOLOGICAL STATE-OF-THE-ART THAT WOULD BE AVAILABLE IN THE ADVANCED TIME PERIOD TO MEET THOSE REQUIREMENTS. SUCCESSIVE ASPECTS OF THE STUDY WERE CONCERNED WITH SYNTHESIZING AN AVIONIC SYSTEM, COMPLETING A COST EFFECTIVENESS EVALUATION, AND THE PREPARATION OF A COCKPIT MOCKUP. APPENDIX II CONTAINS THE DATA PROCESSING ANALYSIS WITH BLOCK DIAGRAMS OF THE MAJOR FUNCTIONAL AREAS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-659 307 8/2 9/2
UNITED AIRCRAFT CORPORATE SYSTEMS CENTER FARMINGTON CONN

GRAPHIC DATA HANDLING TECHNIQUES. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. JUN 66-JUN 67,
JUN 67 233P WILLIAMS,CLIFFORD W. ;
REPT. NO. SCR-351
CONTRACT: DA-44-009-AMC-1831(X)

UNCLASSIFIED REPORT

DESCRIPTORS: (*GRAPHICS, DATA PROCESSING), (*MAPPING, DISPLAY SYSTEMS), (*MAN MACHINE SYSTEMS, GRAPHICS), CATHODE RAY TUBE SCREENS, INPUT OUTPUT DEVICES, FLOW CHARTING, COMPUTER PROGRAMS, HUMAN FACTORS ENGINEERING, DIGITAL COMPUTERS, AUTOMATION, MAPS (U)
IDENTIFIERS: COMPUTER AIDED GRAPHICS, LIGHT PENS, ON-LINE SYSTEMS (U)

TECHNIQUES AND EQUIPMENT FOR HANDLING GRAPHIC DATA WERE THE SUBJECTS OF THE STUDY. THE GRAPHIC DATA WERE DERIVED FROM LINE MAPS, COLOR SEPARATION SHEETS, ORTHOPHOTOGRAPHS AND CONTOUR SHEETS. EQUIPMENT WAS TESTED, WHEREVER FEASIBLE, BY IMPLEMENTING HARDWARE AND SOFTWARE TO ENABLE THE ON-LINE COMMUNICATION BETWEEN A HUMAN OPERATOR AND A DIGITAL COMPUTER. THE HUMAN FACTORS OF HANDLING CARTOGRAPHIC DATA WITH A CATHODE RAY TUBE DISPLAY EQUIPPED WITH A LIGHT PEN WERE STUDIED TO A DEGREE SUFFICIENT TO OBTAIN SPECIFIC CONCLUSIONS. AN OPERATIONAL TEST SYSTEM WAS USED TO OBTAIN RESULTS OF TESTS AND TO EXTRAPOLATE THE DATA OBTAINED FROM THESE TESTS INTO POSSIBLE SYSTEM AND EQUIPMENT CONFIGURATIONS. THE TEST SYSTEM CONSISTED OF A COMPUTATIONAL COMPLEX EQUIPPED WITH A GRAPHICAL DISPLAY WITH PROVISION FOR HUMAN INTERFACE AND AUGMENTED BY A BREADBOARD SCANNER-DIGITIZER. THE OUTPUT OF THE SYSTEM CONSISTS OF AN X-Y PLOTTER CAPABLE OF TRANSLATING DIGITAL DATA INTO HARD COPY. ALTHOUGH THE TESTS EMPHASIZED THE HUMAN INTERFACE WITH A COMPUTATIONAL COMPLEX, THE TYPES OF GRAPHICAL DATA TO BE PROCESSED, THE SOURCES OF THIS DATA, METHODS OF HANDLING DATA, AND SUGGESTIONS FOR SOLVING THE FILE CONVERSION PROCESS WERE ALSO INVESTIGATED. THESE INVESTIGATIONS ARE DIRECTLY RELATED TO THE GRAPHICAL DATA HANDLING TECHNIQUES BECAUSE IT HAS BEEN DETERMINED THAT ANY GIVEN TECHNIQUE OR EQUIPMENT WILL HAVE MANY USES IN THE TOTAL CARTOGRAPHIC SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-663 209 5/5 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

IMPLEMENTATION OF COMPUTER SOFTWARE TECHNIQUES TO HUMAN FACTORS TASK DATA HANDLING PROBLEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 21 JUN 66-30 JUN 67, SEP 67 102P TULLEY,A. T. ;MEYER,G. R. ;
CONTRACT: F33615-67-C-1036
PROJ: AF-1710
TASK: 171006
MONITOR: AMRL TR-67-127

UNCLASSIFIED REPORT

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, *DATA PROCESSING), COMPUTERS, INFORMATION RETRIEVAL, DATA STORAGE SYSTEMS, SYSTEMS ENGINEERING (U)

RESEARCH LEADING TO THE IMPLEMENTATION OF COMPUTER SOFTWARE TECHNIQUES FOR HANDLING HUMAN FACTORS TASK DATA GENERATED IN SUPPORT OF AEROSPACE SYSTEM DEVELOPMENT PROGRAMS IS DISCUSSED. TECHNIQUES BEING EXPLORED IN THIS RESEARCH PROGRAM ARE BASED ON THE ASSUMPTION THAT A USER-ORIENTED COMPUTERIZED DATA SYSTEM WILL HELP DRAW HUMAN FACTORS SPECIALISTS CLOSER TO NEEDED DATA. THE APPLICATION OF SUCH A SYSTEM WILL REDUCE THE PROBLEM OF DATA ACCESSIBILITY AND ALLOW MORE EFFECTIVE USE OF DATA IN THE SYSTEM ENGINEERING PROCESS. PRELIMINARY RESEARCH LEADING TO PROPOSED DATA HANDLING TECHNIQUES IS DISCUSSED. A COMPUTERIZED DATA HANDLING SYSTEM TO STORE, RETRIEVE, AND PROCESS HUMAN FACTORS TASK DATA IS INITIALLY IMPLEMENTED THROUGH A PILOT STUDY. A DISCUSSION OF THE PILOT STUDY SPECIFICATION IS FOLLOWED BY A PRESENTATION OF THE DESIGN SPECIFICATION FOR A COMPUTERIZED EXPERIMENTAL SYSTEM. THE EXPERIMENTAL SYSTEM, REFERRED TO AS THE PILOT STUDY EXPERIMENTAL SYSTEM, PROVIDES THE PRIMARY MEANS FOR DEMONSTRATING AND EVALUATING THE RESEARCH RESULTS AGAINST THE ORIGINAL RESEARCH GOALS. COMPUTER SOFTWARE DESCRIPTIONS ARE PRESENTED FOR IMPLEMENTING THE PILOT STUDY EXPERIMENTAL SYSTEM IN A USER-ORIENTED ENVIRONMENT IN TERMS OF INFORMATION NEEDS OF HUMAN FACTORS SPECIALISTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-664 137 19/5
FRANKFORD ARSENAL PHILADELPHIA PA FIRE CONTROL DEVELOPMENT AND ENGINEERING LABS

COMPUTER, GUN DIRECTION M18 (FADAC) APPLICATIONS MANUAL. (U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,
MAY 67 135P PRICE,THOMAS J. ;
MONITOR: FA TN-1119

UNCLASSIFIED REPORT

DESCRIPTORS: (*FIRE CONTROL COMPUTERS, *INSTRUCTION MANUALS), DIGITAL COMPUTERS, INTEGRATED SYSTEMS, INTERFACES, SYSTEMS ENGINEERING, WEAPON SYSTEMS, ARTILLERY FIRE, INPUT OUTPUT DEVICES, AUTOMATIC, MEMORY DEVICES, COMPUTERS, CALIBRATION, TEST EQUIPMENT, CONTROL PANELS, HUMAN FACTORS ENGINEERING (U)
IDENTIFIERS: FADAC(FIELD ARTILLERY DIGITAL AUTOMATIC COMPUTER), M-18 COMPUTERS (U)

THE FADAC APPLICATIONS MANUAL IS A SUMMARY DOCUMENT WHICH PROVIDES INFORMATION REQUIRED BY SYSTEM ENGINEERS FOR INTEGRATING THE M18 (FADAC) WITH PERIPHERAL DEVICES AND EQUIPMENT. BRIEF INTRODUCTORY DESCRIPTIONS OF THE M18 CHARACTERISTICS AND COMMAND STRUCTURE ARE PROVIDED; WHEREAS THE INPUT-OUTPUT CAPABILITIES ARE DISCUSSED IN DETAIL AND RELATED LOGIC TERMS ARE FULLY DEFINED. DESCRIPTIONS OF INTERFACING WITH REPRESENTATIVE INPUT-OUTPUT DEVICES ARE PROVIDED TO INDICATE THE M18 INPUT-OUTPUT OPERATIONS. A BRIEF DISCUSSION OF SYSTEM DEVELOPMENT PROGRAMS THAT UTILIZE THE M18 ARE ALSO PROVIDED, AS EXAMPLES, TO FURTHER DELINEATE THE INHERENT INPUT-OUTPUT FLEXIBILITY OF THE M18 FOR SYSTEMS INTEGRATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-665 469 5/5
OHIO STATE UNIV COLUMBUS HUMAN PERFORM. NCE CENTER

SOME PRINCIPLES FOR THE DESIGN OF DECISION SYSTEMS: A REVIEW OF SIX YEARS OF RESEARCH ON A COMMAND-CONTROL SYSTEM SIMULATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 APR 60-31 AUG 66,
SEP 67 42P HOWELL,WILLIAM C. ;
CONTRACT: AF 33(615)-2248
PROJ: AF-7184
TASK: 718403
MONITOR: AMRL TR-67-136

UNCLASSIFIED REPORT

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, COMMAND AND CONTROL SYSTEMS), SIMULATION, DECISION MAKING, MATHEMATICAL PREDICTION, MAN MACHINE SYSTEMS, AUTOMATION, PERFORMANCE(HUMAN), STRESS(PSYCHOLOGY) (U)
IDENTIFIERS: BAYES THEOREM (U)

A SET OF GENERAL PRINCIPLES FOR GUIDANCE IN DECISION SYSTEM DEVELOPMENT IS PRESENTED BASED UPON RESEARCH FINDINGS OBTAINED IN A SIMULATED (BUT HIGHLY GENERALIZED) COMMAND-CONTROL SYSTEM. THE CHIEF OBJECTIVE OF THE RESEARCH WAS EVALUATION OF AN AUTOMATED PROCEDURE FOR ASSISTING MAN IN MAKING DIAGNOSTIC DECISIONS. BRIEFLY, THIS PROCEDURE INVOLVED AGGREGATION BY THE MACHINE OF HUMAN EVALUATIONS OF A NUMBER OF SEPARATE ITEMS OF RECONNAISSANCE DATA. COMPARISONS WERE MADE BETWEEN PERFORMANCE OF THE SYSTEM IN ASSESSING ENVIRONMENTAL STATES (E.G., ENEMY STRATEGIES) WHEN THE AUTOMATED PROCEDURE WAS AND WAS NOT IN EFFECT UNDER A VARIETY OF TASK CIRCUMSTANCES (E.G., LOAD, LEVEL OF INFORMATION FIDELITY, FEEDBACK, ETC.). THE 13 PRINCIPLES THUS FORMULATED GENERALLY SUPPORT THE USE OF AN AUTOMATED AGGREGATION PROCEDURE IN DIAGNOSIS. FURTHERMORE, THEY SHOW THAT MACHINE AGGREGATION IS MOST BENEFICIAL IN CIRCUMSTANCES WHICH PRODUCE LARGE AMOUNTS OF LOW-QUALITY DATA OR THOSE IN WHICH THE HUMAN IS PLACED UNDER SOME SORT OF STRESS. SEVERAL OF THE PRINCIPLES SUGGEST POSSIBLE LIMITATIONS ON THE USE OF MACHINES IN DECISION MAKING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-669 129 9/2 5/1
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

SYSTEM ENGINEERING GUIDE FOR COMPUTER PROGRAMS, (U)

MAR 68 174P SEARLE,LLOYD V. ;HENDERSON, ROBERT L. ;

REPT. NO. TM-3596
CONTRACT: F19628-67-C-0178
PROJ: AFSC-2801, AFSC-6917
MONITOR: ESD TR-68-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES AD-666 430.

DESCRIPTORS: (*COMPUTER PROGRAMS, *SYSTEMS ENGINEERING), HANDBOOKS, INSTRUCTION MANUALS, COMPUTER PROGRAMMING, HUMAN FACTORS ENGINEERING, ELECTRONIC EQUIPMENT, MANAGEMENT PLANNING AND CONTROL, MILITARY REQUIREMENTS, FEASIBILITY STUDIES, DATA PROCESSING, SEQUENCES(MATHEMATICS), MAN MACHINE SYSTEMS, CODING, CHECKOUT PROCEDURES, MODIFICATION KITS, FLOW CHARTING, SEQUENCES(MATHEMATICS), PACKAGING, INSTALLATION (U)

THIS REPORT DISCUSSES THE APPLICATION OF SYSTEM ENGINEERING PRINCIPLES TO THE DEVELOPMENT OF COMPUTER PROGRAMS AND ASSOCIATED ELEMENTS OF LARGE SYSTEMS. USING THE 'ROAD MAP' APPROACH AND BASIC CONCEPTS ESTABLISHED BY THE AIR FORCE, IT DESCRIBES STEP-BY-STEP EVENTS DURING THE CONCEPTUAL, DEFINITION, ACQUISITION, AND OPERATIONAL PHASES OF A SYSTEM LIFE CYCLE. TECHNICAL MILESTONES IN SYSTEM COMPUTER PROGRAM ANALYSIS, DESIGN AND DEVELOPMENTS ARE IDENTIFIED AND RELATED TO ASSOCIATED ACTIVITIES AND REQUIREMENTS IN THE AREAS OF TEST AND EVALUATION, CONFIGURATION MANAGEMENT, DATA MANAGEMENT, AND HUMAN FACTORS. PROCEDURES OUTLINED IN THE GUIDE ARE BASED ON EXPERIENCE WITH A NUMBER OF LARGE ELECTRONIC SYSTEMS DEVELOPED FOR THE AIR FORCE. EMPHASIS IN THE DESCRIPTION IS PLACED ON ASPECTS OF THE TECHNICAL PROCESS WHICH HAVE SIGNIFICANT IMPLICATIONS FOR SYSTEM PROGRAM PLANNING AND MANAGEMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-670 604 5/5 5/8 9/2
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

ON THE PSYCHOLOGICAL IMPORTANCE OF TIME IN A TIME SHARING SYSTEM, (U)

SEP 67 30P CARBONELL, JAIME R. ;ELKIND, JEROME I. ;NICKERSON, RAYMOND S. ;
REPT. NO. SCIENTIFIC-6, BBN-1667
CONTRACT: F19628-68-C-0125, ARPA ORDER-627
PROJ: AF-8668
MONITOR: AFCRL 68-0120

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, ACCEPTABILITY), (*MAN MACHINE SYSTEMS, TIME SHARING), INTERACTIONS, COSTS, REACTION(PSYCHOLOGY), COMPUTERS, RESPONSE, HUMAN FACTORS ENGINEERING, MATHEMATICAL ANALYSIS (U)

ONE OF THE MOST IMPORTANT PROBLEMS IN THE DESIGN AND/OR OPERATION OF A COMPUTER UTILITY IS TO OBTAIN DYNAMICAL CHARACTERISTICS THAT ARE ACCEPTABLE AND CONVENIENT TO THE ON-LINE USER. THIS REPORT IS CONCERNED WITH THE PROBLEMS OF ACCESS TO THE COMPUTER UTILITY, RESPONSE TIME AND ITS EFFECT UPON CONVERSATIONAL USE OF THE COMPUTER, AND THE EFFECTS OF THE LOAD ON THE SYSTEM (AND ITS FLUCTUATIONS) UPON THE OTHER ASPECTS. PRIMARY ATTENTION IS PLACED UPON RESPONSE TIME. SOME OF THE DIFFICULTIES IN ITS DEFINITION ARE POINTED OUT THROUGH EXAMINATION OF THE TYPICAL INTERACTION PROCESS. IT IS CONCLUDED THAT RATHER THAN A SINGLE MEASURE A SET OF RESPONSE TIMES SHOULD BE MEASURED IN A GIVEN COMPUTER UTILITY, IN CORRESPONDENCE TO THE DIFFERENT TYPES OF OPERATIONS REQUESTED. NEXT, IT IS TENTATIVELY ASSUMED THAT THE PSYCHOLOGICAL VALUE OF SHORT RESPONSE TIMES STEMS FROM A SUBJECTIVE COST MEASURE OF THE USER'S OWN TIME, LARGELY INFLUENCED BY THE VALUE OF CONCURRENT TASKS BEING POSTPONED. A MEASURE OF COST (TO THE INDIVIDUAL AND/OR HIS ORGANIZATION) OF THE TIME-ON-LINE REQUIRED TO PERFORM A TASK MIGHT THUS BE DERIVED. MORE SUBTLE IS THE PROBLEM OF THE USER'S ACCEPTABILITY IS A FUNCTION OF THE SERVICE REQUESTED (E.G., LENGTH OF COMPUTATION), AND VARIABILITY WITH RESPECT TO EXPECTATIONS DUE BOTH TO UNCERTAINTY IN THE USER'S ESTIMATION AND TO VARIATIONS IN THE RESPONSE TIME ORIGINATED BY VARIABLE LOADS ON THE SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-671 128 5/8 5/5
GEORGE WASHINGTON UNIV ALEXANDRIA VA HUMAN RESOURCES RESEARCH OFFICE

A CONCEPT OF THE ROLE OF MAN IN AUTOMATED SYSTEMS. (U)

MAY 68 11P MELCHING,WILLIAM H. ;
REPT. NO. HUMRRO PROFESSIONAL PAPER-14-68
CONTRACT: DA-44-188-ARO-2
PROJ: DA-2J024701A712
TASK: 2J024701A712-01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE SOUTHWESTERN PSYCHOLOGICAL ASSOCIATION ANNUAL MEETING, NEW ORLEANS, LA., APR 1968.

DESCRIPTORS: (*MAN MACHINE SYSTEMS, HUMAN FACTORS ENGINEERING), (*HUMAN FACTORS ENGINEERING, *DECISION MAKING), SYMPOSIA, NATIONAL DEFENSE, ANTIMISSILE DEFENSE SYSTEMS, AUTOMATIC, COMPUTERS, SYSTEMS ENGINEERING, FAILURE, SELECTION (U)

A PROBLEM THAT HAS LONG PLAGUED SYSTEM DESIGNERS AND HUMAN FACTORS ENGINEERS IS THAT OF ALLOCATION OF FUNCTIONS BETWEEN MAN AND MACHINE. THIS PAPER REPORTS AN ATTEMPT TO ISOLATE AND IDENTIFY FACTORS PERTINENT TO MAKING ALLOCATION DECISIONS. FROM AN ANALYSIS OF THE FUNCTIONS AND MISSIONS OF SEVERAL AUTOMATED SYSTEMS, SIX FACTORS WERE SHOWN TO BE HIGHLY RELEVANT TO ALLOCATION DECISIONS. ONE FACTOR, MAN'S ROLE IN AUTOMATED SYSTEMS, EMERGED AS A VARIABLE OF PARTICULAR INTEREST. IN ADDITION, FOUR CLASSES OF MANUAL FUNCTIONS COMMON TO ALL AUTOMATED SYSTEMS WERE IDENTIFIED. IT WAS DETERMINED THAT THESE CLASSES, IN TURN, CONSTITUTED A MEANINGFUL DESCRIPTION OF THE ROLE OF MAN IN TODAY'S AUTOMATED SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-671 531 5/? 5/5 9/2
SYSTEM DEVELOPMENT CORP DAYTON OHIO

COMPUTERIZED HUMAN FACTORS TASK DATA HANDLING TECHNIQUES. USER'S AND CONTROLLER'S OPERATING GUIDES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 30 JUN-31 OCT 67, MAR 68 148P REARDON,SUE E. ;
CONTRACT: F33615-67-C-1036
PROJ: AF-1710
TASK: 171006
MONITOR: AMRL TR-67-226

UNCLASSIFIED REPORT

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, INFORMATION RETRIEVAL), (*INFORMATION RETRIEVAL, *DATA PROCESSING), DATA STORAGE SYSTEMS, INSTRUCTION MANUALS, PERSONNEL, PERFORMANCE(HUMAN), HAZARDS, ERRORS, TIME SHARING, TELETYPE SYSTEMS, DIGITAL COMPUTERS (U)
IDENTIFIERS: AN/FSQ-32 (U)

INSTRUCTIONS ARE PRESENTED FOR THE OPERATION OF AN EXPERIMENTAL COMPUTERIZED DATA HANDLING SYSTEM. THESE INSTRUCTIONS WERE DEVELOPED AS PART OF THE OVERALL RESEARCH INTO A USER-ORIENTED COMPUTERIZED SYSTEM TO STORE, RETRIEVE, AND PROCESS HUMAN FACTORS TASK DATA. THESE INSTRUCTIONS ARE INTENDED AS A MODEL FOR FUTURE OPERATING GUIDES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-673 348 5/8 5/10 12/2 15/7
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

MATHEMATICAL MODELS OF HUMAN PERFORMANCE IN MAN-MACHINE SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT. APR-DEC 67,
MAY 68 21P TOPMILLER,DONALD A. ;
REPT. NO. AMRL-TR-68-22
PROJ: AF-7184
TASK: 718403

UNCLASSIFIED REPORT

DESCRIPTORS: (•MAN MACHINE SYSTEMS, MATHEMATICAL MODELS), (•PERFORMANCE(HUMAN), •DECISION MAKING), COMMAND AND CONTROL SYSTEMS, THREAT EVALUATION, WAR GAMES, MAINTENANCE, SIMULATION, FACTOR ANALYSIS, REGRESSION ANALYSIS, AUTOMATION, REAL TIME (U)
IDENTIFIERS: COMPUTERS (U)

THE REPORT DESCRIBES THREE RESEARCH APPROACHES TO THE PROBLEM OF MATHEMATICALLY REPRESENTING HUMAN PERFORMANCE PARAMETERS IN WEAPON, MAINTENANCE, AND COMMAND AND CONTROL SYSTEMS. IN THE FIRST APPROACH, TWENTY OPERATIONS RESEARCH ANALYSES AND MODELS OF MILITARY SYSTEMS WERE EXAMINED TO DETERMINE IF THE MODELS INCLUDED HUMAN FACTORS PARAMETERS AND TO WHAT EXTENT THEY WERE SENSITIVE TO VARIATIONS IN THESE PARAMETERS. ALTHOUGH MANY OF THE FUNCTIONS OF THE SYSTEMS MODELED WERE PERFORMED BY HUMANS, HUMAN PERFORMANCE PARAMETERS WERE NOT, IN GENERAL, SUFFICIENTLY DEFINED TO PERMIT MATHEMATICAL OR EMPIRICAL MANIPULATION WITHIN A MAN-MACHINE SIMULATION FRAMEWORK. IN THE SECOND APPROACH, AN ATTEMPT WAS MADE TO ESTABLISH PREDICTIVE RELATIONSHIPS, BASED ON REGRESSION AND FACTOR ANALYSIS TECHNIQUES, BETWEEN HUMAN ENGINEERING DESIGN PARAMETERS AND THOSE CRITERIA OF SYSTEMS EFFECTIVENESS, SUCH AS MAINTENANCE TASK TIME, THAT CAN BE TRANSFORMED INTO A MORE MOLAR INDEX--SYSTEM DOWNTIME. THE HUMAN ENGINEERING PREDICTOR-PARAMETERS ACCOUNTED FOR 50% OF THE CRITERION VARIANCE. IN THE THIRD APPROACH, A SERIES OF EXPERIMENTS INVOLVING REAL-TIME SIMULATION OF A COMMAND AND CONTROL SYSTEM WAS CONDUCTED TO DETERMINE IF, AND HOW, A COMPUTER MIGHT AID DIAGNOSTIC PERFORMANCE (IN TACTICAL DECISION MAKING) IN THREAT EVALUATIONS.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-674 696 5/8 6/4
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

MAN AND TECHNOLOGY, (U)

OCT 67 75P ZINCHENKO,V. P. ;SMOLYAN, G. L. ;
REPT. NO. FTD-MT-24-328-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO. CHELOVEK I TEKHNIKA, SISTEMY UPRAVLENIYA I INZHENERNAYA PSIKHOLOGIYA, MOSCOW, 1965 P3-48.

DESCRIPTORS: (•MAN MACHINE SYSTEMS, •CYBERNETICS), BIONICS, NERVOUS SYSTEM, VISUAL PERCEPTION, HUMAN FACTORS ENGINEERING, CONTROL SYSTEMS, AUTOMATIC, PERFORMANCE(HUMAN), COMPUTERS, MODELS(SIMULATIONS), DECISION MAKING, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

CONTENTS: PROBLEM OF THE CYBERNETIC CENTURY; HUMAN FACTORS AND OPERATOR ACTIVITY; PERCEPTION - - DECISION ACTION; IN THE LANGUAGE OF MODELS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-677 368 5/5 5/2
TUFTS UNIV MEDFORD MASS INST FOR PSYCHOLOGICAL RESEARCH

HUMAN FACTORS ENGINEERING BIBLIOGRAPHIC SERIES. VOLUME 4, 1966 LITERATURE. (U)

DEC 67 623P RONCO,PAUL G. ;
CONTRACT: DA-18-001-AMC-1004(X)
MONITOR: HEL BIB-VOL-4

UNCLASSIFIED REPORT

DESCRIPTORS: (•HUMAN FACTORS ENGINEERING, BIBLIOGRAPHIES), ACOUSTICS, AIRCRAFT, AUTOMATION, CLOTHING, COMMUNICATION SYSTEMS, CONTROL SYSTEMS, DRUGS, DISPLAY SYSTEMS, ILLUMINATION, MARINE ENGINEERING, MAINTENANCE, NOISE, PHYSIOLOGY, SAFETY, SIGNALS, SPACE NAVIGATION, TRAINING, TRANSPORTATION, HANDBOOKS, DETECTION, ENVIRONMENT, SIMULATION (U)

THIS BIBLIOGRAPHY IS THE FOURTH IN A PLANNED SERIES OF BIBLIOGRAPHIES OF LITERATURE PERTINENT TO THE FIELD OF HUMAN FACTORS ENGINEERING. IT COVERS LITERATURE OF 1966. THIS BIBLIOGRAPHY CONSISTS PRIMARILY OF: (1) AN INDEX TO THE HUMAN FACTORS LITERATURE, AND (2) THE ANNOTATED BIBLIOGRAPHY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-682 362 5/5 5/2 9/2
SYSTEM DEVELOPMENT CORP DAYTON OHIO

DEVELOPMENT AND APPLICATION OF COMPUTER SOFTWARE TECHNIQUES TO HUMAN FACTORS TASK DATA HANDLING PROBLEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT., 1 JUL 67-27 SEP 68, NOV 68 192P TULLEY,ALBERT T. ;MEYER, GEORGE R. ;OLLER,ROBERT G. ;MITCHELL,PHYLLIS J. ;REARDON,SUE E. ;
CONTRACT: F33615-67-C-1036
PROJ: AF-1710
TASK: 171006
MONITOR: AFHRL TR-68-13

UNCLASSIFIED REPORT

DESCRIPTORS: (•HUMAN FACTORS ENGINEERING, •INFORMATION RETRIEVAL), COMPUTER PROGRAMMING, DATA PROCESSING, JOB ANALYSIS, CLASSIFICATION, VOCABULARY, FEASIBILITY STUDIES (U)

RESEARCH LEADING TO THE APPLICATION AND IMPLEMENTATION OF TECHNIQUES FOR COMPUTER HANDLING OF HUMAN FACTORS TASK DATA GENERATED IN SUPPORT OF AEROSPACE SYSTEM DEVELOPMENT PROGRAMS IS DISCUSSED. THE TECHNIQUE DEVELOPMENT IS BASED ON THE ASSUMPTION THAT A USER-ORIENTED COMPUTERIZED DATA HANDLING SYSTEM WILL HELP DRAW HUMAN FACTORS SPECIALISTS CLOSER TO NEEDED DATA. THE APPLICATION OF THESE TECHNIQUES SHOULD REDUCE THE PROBLEM OF DATA ACCESSIBILITY AND ALLOW MORE EFFECTIVE USE OF DATA IN THE SYSTEM DESIGN AND DEVELOPMENT PROCESS. A COMPUTERIZED DATA HANDLING SYSTEM TO STORE, SELECTIVELY RETRIEVE, AND PROCESS HUMAN FACTORS DATA IN A USER-ORIENTED ENVIRONMENT WAS IMPLEMENTED THROUGH A PILOT STUDY EXPERIMENTAL SYSTEM (PSES). THIS EXPERIMENTAL SYSTEM PROVIDED THE PRIMARY MEANS FOR EVALUATING THE RESEARCH RESULTS. THIS REPORT DISCUSSES THE DEVELOPMENT PROCESS OF THE PSES, THE COMPUTER SOFTWARE USED BY THE PSES, DATA CLASSIFICATION TECHNIQUES, AND VOCABULARY CONTROLS. CONSIDERATION IS ALSO GIVEN TO THE FEASIBILITY OF PROVIDING (1) ANALYTIC AND SIMULATION TOOLS IN A USER-ORIENTED ENVIRONMENT, (2) CURRENT AWARENESS NOTIFICATION OF DATA ENTRIES, AND (3) AN ADVANCED AND SOPHISTICATED CLASSIFICATION SCHEME FOR IDENTIFYING FUNCTIONAL RELATIONSHIPS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-684 548 5/5
OHIO STATE UNIV COLUMBUS HUMAN PERFORMANCE CENTER

SOME PRINCIPLES FOR DESIGN OF DECISION SYSTEMS: A REVIEW OF THE FINAL PHASE OF RESEARCH ON A COMMAND-CONTROL SYSTEM SIMULATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 SEP 66-31 MAR 68,
NOV 68 54P HOWELL,WILLIAM C. ;GETTYS,
CHARLES F. ;
CONTRACT: AF 33(615)-2248
PROJ: AF-7184
TASK: 718403
MONITOR: AMRL TR-68-158

UNCLASSIFIED REPORT

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, COMMAND AND CONTROL SYSTEMS), DECISION MAKING, SIMULATION, MAN MACHINE SYSTEMS, AUTOMATION, PROBABILITY, MATHEMATICAL PREDICTION (U)
IDENTIFIERS: BAYES THEOREM (U)

THE CHIEF OBJECTIVE OF THE PRESENT RESEARCH WAS TO ANTICIPATE A NUMBER OF ISSUES WHICH WOULD ARISE IF AN AUTOMATED AID TO DECISION MAKING WERE ACTUALLY IMPLEMENTED. QUESTIONS ASKED INCLUDED: (1) WHAT HAPPENS TO SYSTEM PERFORMANCE IF PROBABILISTIC INFORMATION IS REDUCED TO AN ALL-OR-NONE FORM AT SOME POINT IN PROCESSING. (2) CAN A HIERARCHICAL (SPECIALIST-NONSPECIALIST) SYSTEM USE LIMITED RESOURCES EFFECTIVELY TO GATHER PREDICTIVE DATA. (3) CAN A SYSTEM IN WHICH AGGREGATION OF PREDICTIVE INFORMATION IS AUTOMATED BENEFIT FROM A MANUAL SUPPLEMENT (TO HANDLE UNANTICIPATED DATA). RESULTS SUMMARIZED IN THE NINE PRINCIPLES SUGGEST THAT (1) ALL-NONE TRANSFORMATION OF PROBABILISTIC DATA CAN SERIOUSLY DEGRADE SYSTEM PERFORMANCE, ESPECIALLY IF SYSTEM RESPONSE IS IN ANY WAY DEPENDENT UPON LIKELIHOOD OF ALTERNATIVE STATES (BUT THERE ARE SEVERAL IMPORTANT EXCEPTIONS TO THIS RULE); (2) POTENTIAL DEFICIENCIES IN ALLOCATION OF RESOURCES BY THE SYSTEM SHOULD BE GUARDED AGAINST IN FUTURE SYSTEM DESIGNS; (3) AN AUTOMATED AGGREGATION DESIGN CAN BE ENHANCED BY A MANUAL SUPPLEMENT TO DEAL WITH UNANTICIPATED DATA; (4) A VOICE COMMUNICATION CAPABILITY DOES NOT OFFSET SYSTEM PERFORMANCE DEFICIT ATTRIBUTABLE TO DEGRADATION OF OTHER PROCESSING MODES.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-687 488 5/9 5/5 6/2
LOCKHEED MISSILES AND SPACE CO SUNNYVALE CALIF
BIOTECHNOLOGY

HUMAN FACTORS AND BIOTECHNOLOGY - A STATUS SURVEY FOR 1968-69. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 68-MAY 69,
APR 69 422P KRAFT,JACK A. ;
REPT. NO. LMSC-687154
CONTRACT: N00014-68-C-0378
PROJ: NR-196-079

UNCLASSIFIED REPORT

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, REVIEWS), (*PERSONNEL MANAGEMENT, BIOLOGY), PERSONNEL, SALARIES, ORGANIZATIONS, EFFECTIVENESS, EDUCATION, COMPUTERS, INDUSTRIAL RESEARCH (U)
IDENTIFIERS: BIOENGINEERING (U)

THE REPORT DEALS WITH THE FINDINGS OF A SURVEY OF OVER 500 HUMAN FACTORS AND BIOTECHNOLOGY PROGRAMS IN U.S.A. BUSINESS AND INDUSTRY, CONSULTING, GOVERNMENT, NON-PROFIT RESEARCH AND EDUCATIONAL ORGANIZATIONS. THE SURVEY GATHERED INFORMATION RELATIVE TO: SIZE OF HUMAN FACTORS AND BIOTECHNOLOGY (HF-BIO) ORGANIZATIONS; GROWTH OF THE PROFESSION, TURNOVER RATES, REPORTING LEVELS, GROUP COMPOSITION, QUALIFICATIONS FOR HF-BIO PEOPLE; ACADEMIC DEGREES, HIRING SOURCES, HIRING METHODS, SALARIES, SOURCES OF PROGRAM SUPPORT, ACTIVITIES, FACILITIES; COMPUTER USAGE, PUBLICATIONS, PRESENTATIONS, PROFESSIONAL SOCIETY MEMBERSHIP, AND MEETING ATTENDANCE, FILMS, WORK AIDS AND DEVICES, PROFESSIONAL DEVELOPMENT, PROJECTED GROWTH OF FIELD, HF-BIO EDUCATIONAL PROGRAMS, DEGREES OFFERED, APPRENTICESHIPS, NUMBER OF STUDENTS TRAINED, PROBLEMS ASSOCIATED WITH THE HF-BIO FIELD, MEANS FOR INCREASING THE EFFECTIVENESS OF THE PROFESSION AND TRENDS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-688 58; 15/4 9/2 9/1
HRB-SINGER INC STATE COLLEGE PA

IMPLICATIONS OF BESRL RESEARCH FOR DISPLAYS IN TACTICAL INFORMATION PROCESSING. (U)

DESCRIPTIVE NOTE: TECHNICAL RESEARCH REPT.,
JAN 69 34P MCKENDRY,JAMES M. ;MACE,
DOUGLAS J. ;BAKER,JAMES D. ;
CONTRACT: DAHC19-68-C-0006
PROJ: DA-2-0-062106-A-723
MONITOR: BESRL TRR-1156

UNCLASSIFIED REPORT

DESCRIPTORS: (*TACTICAL WARFARE, *DISPLAY SYSTEMS), (*DATA PROCESSING, HUMAN FACTORS ENGINEERING), MILITARY OPERATIONS, DEPLOYMENT, TIME, VOLUME, MILITARY INTELLIGENCE, INPUT OUTPUT DEVICES, FEASIBILITY STUDIES, CATHODE RAY TUBE SCREENS, MAPPING, AUTOMATION, DECISION MAKING, PERFORMANCE(HUMAN), PREDICTIONS (U)
IDENTIFIERS: TOS(TACTICAL OPERATIONS SYSTEMS) (U)

THE PURPOSE OF THE REPORT IS TWO-FOLD: FIRST, TO EXAMINE THE POTENTIAL IMPACT OF PAST AND ON-GOING HUMAN PERFORMANCE RESEARCH ON OPERATIONAL PROBLEMS IN ASSIMILATING INFORMATION FROM SITUATION DISPLAYS IN THE FIELD; SECOND, TO IDENTIFY OPERATIONAL PROBLEM AREAS INVOLVING PREPARATION AND USE OF SITUATION DISPLAYS WHICH COULD PROFIT FROM DETAILED HUMAN PERFORMANCE RESEARCH. DURING FIELD OPERATIONS, MILITARY STAFF OFFICERS MAINTAIN A REPRESENTATION OF THE TACTICAL SITUATION OF BOTH FRIENDLY AND ENEMY FORCES. THE STAFF ELEMENT PRIMARILY CONCERNED WITH THE FRIENDLY FORCE SITUATION IS THE OPERATIONS ELEMENT (G3); THE INTELLIGENCE ELEMENT (G2) FOCUSES ON THE ENEMY SITUATION. WITH THE STAFFS OF BOTH ELEMENTS, ASSIMILATION OF INFORMATION FROM SITUATION DISPLAYS IS AN IMPORTANT PART OF THE JOB. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-689 365 5/2 9/2
GEORGE WASHINGTON UNIV WASHINGTON D C LOGISTICS RESEARCH PROJECT

DATA INPUT ERROR DETECTION AND CORRECTION PROCEDURES, (U)

JUN 69 246P VARLEY,THOMAS C. ;
REPT. NO. SERIAL-T-222
CONTRACT: N00014-67-A-0214-0001
PROJ: NR-047-001

UNCLASSIFIED REPORT

DESCRIPTORS: (*INFORMATION RETRIEVAL, ACCURACY), ERRORS, DETECTION, CORRECTIONS, HUMAN FACTORS ENGINEERING, MANAGEMENT PLANNING AND CONTROL, DATA PROCESSING, AUTOMATION, COLLECTING METHODS, INFORMATION THEORY, CLASSIFICATION, DECISION MAKING, COSTS, RELIABILITY, COMPUTERS, COMPUTER PERSONNEL, INPUT OUTPUT DEVICES, PUNCHED CARDS, READING MACHINES, THESES (U)
IDENTIFIERS: DECISION MAKING, MODELS, *INFORMATION SYSTEMS (U)

THE STUDY IS AN EXAMINATION OF THE INPUT DATA ERROR PROBLEM IN COMPUTERIZED INFORMATION SYSTEMS. THE AREA OF CONCERN IS THE DETECTION AND CORRECTION OF INPUT DATA ERRORS RESULTING FROM HUMAN RECORDING DURING THE INITIAL COLLECTION OF THE DATA. THIS RESEARCH ATTEMPTS TO REMOVE SOME OF THE MYSTERY SURROUNDING THE INPUT ERROR PROBLEM. A SYSTEM FOR CLASSIFYING ERRORS BY TYPE IS DEVELOPED; ATTENTION IS PAID TO THE KINDS OF ERRORS WHICH CAN BE MADE OR INTRODUCED AT VARIOUS LEVELS IN THE DATA GENERATION-DATA PROCESSING CHAIN. MORE IMPORTANT, THESE LEVELS AND THEIR POTENTIAL USE TO MANAGERS AND RESEARCHERS ALIKE PROVIDE A CONCEPTUAL FRAMEWORK IN WHICH INTELLIGENT DISCUSSIONS CONCERNING THE ERROR PROCESS CAN BE FORMULATED. THE CONCEPT OF DATA WORTH ALONE PROVIDES A SIGNIFICANT STEP FORWARD IN BUILDING AN INTELLIGENT DETECTION AND CORRECTION PROCESS. THE STUDY DEVELOPS A SYSTEMATIC PROCEDURE--A MODEL--FOR EVALUATING THE VARIOUS DETECTION AND CORRECTION ALTERNATIVES. THE FINAL EVALUATION OF THE DETECTION AND CORRECTION PROCEDURES TO BE USED IN THE SYSTEM IS BASED ON COST. THIS IS NOT DISPLACEMENT COST, BUT COST ASSOCIATED WITH IMPROVED OPERATIONS THROUGH MORE ACCURATE INFORMATION. THE VALUE OF INFORMATION IS THE WORTH OF THE DATA, AND THE WORTH OF THE DATA IS THE DATA ACCURACY PROBLEM. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-694 347 5/10 9/2
ARMY BEHAVIORAL SCIENCE RESEARCH LAB ARLINGTON VA

HUMAN FACTORS RESEARCH IN COMMAND INFORMATION PROCESSING SYSTEMS--SUMMARY OF RECENT STUDIES. (U)

DESCRIPTIVE NOTE: TECHNICAL RESEARCH REPT.,
JUL 69 27P RINGEL,SEYMOUR ;BAKER,JAMES D. ;STRUB,MICHAEL H. ;KENSINGER,LOREN L. ;

REPT. NO. BESRL-TRR-1158
PROJ: DA-2-Q-024701-A-723

UNCLASSIFIED REPORT

DESCRIPTORS: (*MILITARY OPERATIONS, DATA PROCESSING), (*DECISION MAKING, MAN MACHINE SYSTEMS), COMPUTER PROGRAMMING, INFORMATION RETRIEVAL, PERFORMANCE(HUMAN), PERFORMANCE(ENGINEERING), AUTOMATION, HUMAN FACTORS ENGINEERING, OFFICER PERSONNEL, REVIEWS, CATHODE RAY TUBES, TYPEWRITERS, TELETYPE SYSTEMS, DATA STORAGE SYSTEMS, SIMULATION, PROBLEM SOLVING (U)
IDENTIFIERS: *MANAGEMENT INFORMATION SYSTEMS, MILITARY PERSONNEL, MILITARY OPERATIONS, TACTICAL WARFARE (U)

THE RESEARCH IS DIRECTED TOWARD SOLVING PROBLEMS ASSOCIATED WITH INFORMATION PROCESSING AND DECISION MAKING BY COMMANDERS AND THEIR STAFFS. IT FOCUSES ON ONE OR MORE ASPECTS OF EVENTS WHICH OCCUR FROM THE TIME A COMMANDER RECEIVES HIS MISSION UNTIL HE COMPLETES IT. THIS CHAIN OF EVENTS IS THE SYSTEM WITHIN WHICH COMMAND DECISIONS ARE FORMULATED AND EXECUTED--A TACTICAL OPERATIONS SYSTEM WITHIN WHICH TACTICAL INFORMATION PROCESSING IS PERFORMED. HUMAN INFORMATION PROCESSING AND DECISION MAKING MAY BE OBSERVED ON AN ABSTRACT LEVEL IN THE LABORATORY OR AS OPERATIONAL PROCEDURES IN THE FIELD. TO PROVIDE A RESEARCH CAPABILITY RESPONSIVE TO REQUIREMENTS FOR VARYING DEGREES OF OPERATIONAL SIMULATION, THE COMMAND SYSTEMS PROGRAM HAS ESTABLISHED BOTH LABORATORY AND FIELD APPROACHES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-696 342 5/5 7/1
MEDICAL RESEARCH COUNCIL CAMBRIDGE (ENGLAND) APPLIED PSYCHOLOGY RESEARCH UNIT

DESIGNING CONTROL ROOMS TO SUIT THE MEN IN THEM, (U)

61 2P POULTON,E. C. ;
REPT. NO. APU-411/61.

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN BRITISH CHEMICAL ENGINEERING, OCT 61. NO COPIES FURNISHED.

DESCRIPTORS: (*INDUSTRIAL EQUIPMENT, CONTROL PANELS), (*INDUSTRIAL PLANTS, HUMAN FACTORS ENGINEERING), AUTOMATION, PERFORMANCE(HUMAN), DESIGN, INDUSTRIAL PSYCHOLOGY, ENVIRONMENT, INSTRUMENTATION, FAILURE, ERRORS, GREAT BRITAIN (U)
IDENTIFIERS: *CONTROL ROOMS, GRAPHIC PANELS (U)

THE LAYOUT OF THE CONTROL ROOM IN A NEW CHEMICAL PLANT SHOULD BE DESIGNED TO SUIT THE KIND OF MAN WHO WILL USE IT. SOME OF THE SPECIALIZED KNOWLEDGE REQUIRED IS AVAILABLE IN TEXTBOOKS. A CONSULTANT, OR GIVEN TIME, A RESEARCH UNIT MAY BE ABLE TO SUPPLY THE REST. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-697 034 5/9
AIR FORCE HUMAN RESOURCES LAB WRIGHT-PATTERSON AFB OHIO

JOB PERFORMANCE AIDS RESEARCH, SUMMARY AND RECOMMENDATIONS, (U)

APR 69 28P FOLEY,JOHN F. , JR:

UNCLASSIFIED REPORT

DESCRIPTORS: (*MAINTENANCE PERSONNEL, CHECKOUT PROCEDURES), (*ELECTRONIC EQUIPMENT, MAINTENANCE), SIMULATORS, HUMAN FACTORS ENGINEERING, ELECTRONIC TECHNICIANS, JOB ANALYSIS, ELECTRONIC EQUIPMENT, SMALL TOOLS, INFORMATION RETRIEVAL, AUTOMATION, TRAINING, MICROELECTRONICS, TOPOLOGY, COMPUTER PROGRAMMING, AIR FORCE RESEARCH (U)
IDENTIFIERS: COMPUTER ANALYSIS, *JOBS, *PERFORMANCE(HUMAN), TROUBLESHOOTING (U)

THE EXPERIMENTAL EVIDENCE, TO DATE, INDICATES THAT GREAT SAVINGS BOTH IN SYSTEM MAINTENANCE EFFICIENCY AND IN TRAINING EFFICIENCY CAN BE OBTAINED BY WELL DESIGNED JOB PERFORMANCE AIDS. THE PURPOSE OF THE REPORT IS TO SUMMARIZE FINDINGS, TO COMPARE THE SCOPE OF EACH OF THE IMPORTANT EFFORTS, TO IDENTIFY AREAS OF DIFFICULTY IN IMPLEMENTING RESEARCH FINDINGS, AND TO MAKE RECOMMENDATIONS FOR AN IMPLEMENTATION PROGRAM THAT WILL OBTAIN IMMEDIATE AS WELL AS LONG RANGE GAINS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-697 587 5/5 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

REPORT ON AUTOMATED HUMAN FACTORS TASK DATA HANDLING RESEARCH. (U)

67 9P WISE,FRED H. ;REED, LAWRENCE E. ;

CONTRACT: AF 19(628)-3418
PROJ: AF-1710
TASK: 171006
MONITOR: AMRL TR-66-117

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN HUMAN FACTORS, V9 N2 P181-186 APR 67.

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, *DATA PROCESSING), MAN MACHINE SYSTEMS, AUTOMATION, COMPUTER PROGRAMMING, COMMUNICATION SYSTEMS, CLASSIFICATION, INFORMATION RETRIEVAL, STANDARDIZATION, ELECTRONIC EQUIPMENT, AEROSPACE MEDICINE, AIRCRAFT EQUIPMENT (U)
IDENTIFIERS: AEROSPACE ENGINEERING (U)

THE DOCUMENT REPORTS ON A JOINT RESEARCH EFFORT TO EXPLORE AND, WHERE POSSIBLE, DEVELOP TECHNIQUES FOR EFFICIENT HANDLING AND PROCESSING OF HUMAN FACTORS TASK DATA GENERATED IN SUPPORT OF A PERSONNEL SUBSYSTEM PROGRAM. THESE TECHNIQUES ARE BEING DEVELOPED WITHIN THE CONTEXT OF AN OVERALL DATA HANDLING SYSTEM CONCEPT WHICH WOULD OPERATE IN AN AIR FORCE/NASA/CONTRACTOR ENVIRONMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-699 173 5/9 5/8 5/1
NAVAL PERSONNEL AND TRAINING RESEARCH LAB SAN DIEGO CALIF

THE DEVELOPMENT OF A HUMAN EFFECTIVENESS FUNCTION ALLOCATION METHODOLOGY (HEFAM). (U)

DESCRIPTIVE NOTE: INTERIM REPT. 1968-1969,
OCT 69 43P CONNELLY,MARILEE N. ;WILLIS, JOE E. ;
REPT. NO. SRM-70-11
PROJ: PF39.511.001.01.02

UNCLASSIFIED REPORT

DESCRIPTORS: (*MAN MACHINE SYSTEMS, COST EFFECTIVENESS), (*PERFORMANCE(HUMAN), OPTIMIZATION), NAVAL RESEARCH, PERSONNEL MANAGEMENT, AUTOMATION, REVIEWS, DATA PROCESSING, MATHEMATICAL MODELS, DATA STORAGE SYSTEMS, HUMAN FACTORS ENGINEERING, FACTOR ANALYSIS (U)
IDENTIFIERS: INTERVIEWS (U)

THE STUDY WAS CONDUCTED IN AN ATTEMPT TO MEET THE NAVY'S NEED FOR IMPROVED METHODS OF ASSIGNING FUNCTIONS TO MEN, MACHINES, OR MAN/MACHINE COMBINATIONS IN NEW SYSTEMS UNDER DEVELOPMENT. RAPID DEVELOPMENT OF NAVY TECHNOLOGY HAS INCREASED THE OPPORTUNITY TO AUTOMATE FUNCTIONS AND TASKS TRADITIONALLY PERFORMED BY HUMANS. ALTHOUGH SYSTEM RELIABILITY IS OFTEN INCREASED BY AUTOMATION, THE COST IS FREQUENTLY ALSO INCREASED. FACED WITH DEFINITE MISSION REQUIREMENTS AND LIMITED FINANCIAL RESOURCES, THE NAVY MUST SELECT THOSE FUNCTION ALLOCATION ALTERNATIVES WHICH OPTIMIZE COST/EFFECTIVENESS DURING THE LIFETIME OF THE SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-704 857 5/5
NAVAL PERSONNEL AND TRAINING RESEARCH LAB SAN DIEGO CALIF

HUMAN FACTORS METHODS DEVELOPMENT AND TEST: I. EVALUATION OF THE CORRECTIVE MAINTENANCE BURDEN PREDICTION PROCEDURE. (U)

DESCRIPTIVE NOTE: RESEARCH MEMO.,
MAR 70 37P LARSON,ORVIN A. ;WILLIS, JOE E. ;
REPT. NO. SRM-70-14
PROJ: PF39.521.014.01.01

UNCLASSIFIED REPORT

DESCRIPTORS: (*ELECTRONIC EQUIPMENT, MAINTENANCE), (*PERFORMANCE(HUMAN), MATHEMATICAL PREDICTION), NAVAL RESEARCH, PERSONNEL MANAGEMENT, HUMAN FACTORS ENGINEERING, MAN MACHINE SYSTEMS, DATA PROCESSING (U)
IDENTIFIERS: *CORRECTIVE MAINTENANCE (U)

THE REPORT IS TO DOCUMENT AN EVALUATION OF THE USEFULNESS OF THE CORRECTIVE MAINTENANCE BURDEN (CMB) PREDICTION PROCEDURE TO APPLIED SYSTEMS RESEARCH. THE APPROACH USED WAS TO ANALYZE THE BASIC STRUCTURE OF CMB AND THEN TO OPERATIONALLY APPLY CMB TO AN ACTUAL DEVELOPING ELECTRONIC SYSTEM. CMB WAS APPLIED TO TWO DISSIMILAR SYSTEMS BY THE APPLIED SYSTEMS PERSONNEL RESEARCHERS ASSIGNED TO THOSE SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-705 369 1/3 5/5 5/8
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT
PARIS (FRANCE)

PROBLEMS OF THE COCKPIT ENVIRONMENT. (U)

DESCRIPTIVE NOTE: CONFERENCE PROCEEDINGS.
MAR 70 404P
REPT. NO. AGARD-CP-55

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE AVIONICS PANEL TECHNICAL SYMPOSIUM (16TH), HELD IN COOPERATION WITH THE AEROSPACE MEDICAL PANEL, THE FLIGHT MECHANICS PANEL AND THE GUIDANCE AND CONTROL PANEL OF AGARD AT AMSTERDAM (NETHERLANDS) NOV 68. NATO FURNISHED.

DESCRIPTORS: (*COCKPITS, *HUMAN FACTORS ENGINEERING), ENVIRONMENT, FLIGHT CREWS, STRESS(PSYCHOLOGY), MAN MACHINE SYSTEMS, JOB ANALYSIS, DISPLAY SYSTEMS, DATA PROCESSING, TRAINING, DESIGN, PERSONNEL MANAGEMENT, AVIATION SAFETY, ALL WEATHER AVIATION (U)

CONTENTS: THE PROBLEMS OF DETERMINING CREW CAPABILITY UNDER STRESS; PROBLEMS IN ANALYSIS AND MEASUREMENT OF INFORMATION TRANSFER REQUIREMENTS AND EFFECTIVENESS FOR VARIOUS MISSIONS; THE PROBLEMS OF CORRELATING CREW TRAINING, CREW SIZE AND COMPOSITION, AND AUTOMATED ASSISTANCE; THE PROBLEMS OF COCKPIT DESIGN INCLUDING INSTRUMENTATION COMPUTER/DISPLAY/CONTROL SYSTEMS AND COMPONENTS; THE PROBLEMS OF COCKPIT INFORMATION GENERATION; OPEN FORUM FOR INTER-DISCIPLINARY DISCUSSIONS; THE PROBLEMS OF DERIVING IN-COCKPIT AND HEAD-UP INFORMATION DISPLAY CONFIGURATIONS; AND SESSION CHAIRMEN, SUMMARY AND CONCLUSIONS--PRESENTATIONS TO WHOLE ASSEMBLY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-707 544 9/2
INTERNATIONAL BUSINESS MACHINES CORP SAN JOSE CALIF SAN JOSE RESEARCH LAB

FILE DESIGN-A PRACTICAL APPROACH. VOLUME II. FILE ORGANIZATION MODELING SYSTEM - USER'S MANUAL. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
OCT 69 83P SENKO,MICHAEL E. ;MEADOW, HARRIET R. ;
CONTRACT: F30602-69-C-0100
PROJ: AF-4594
TASK: 459403
MONITOR: RADC TR-69-392-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-707 155.

DESCRIPTORS: (•DATA PROCESSING, DESIGN), (•MEMORY DEVICES, SELECTION), COMPUTER PROGRAMMING, INFORMATION RETRIEVAL, MANAGEMENT PLANNING AND CONTROL, COST EFFECTIVENESS, EFFICIENCY, MATHEMATICAL MODELS, SIMULATION (U)
IDENTIFIERS: •FILE STRUCTURES (U)

THE PROTOTYPE FILE DESIGN HANDBOOK CONTAINS EXTENSIVE QUANTITATIVE FILE DESIGN DISCUSSION. THE BASIC FOUNDATION OF THE DISCUSSION IS PROVIDED BY TABLES AND GRAPHS DERIVED FROM HUNDREDS OF ACTUAL MACHINE AND SIMULATION MODEL RUNS. THESE RUNS TAKE INTO CONSIDERATION ALL THE COMPLEX CHARACTERISTICS OF REAL-LIFE ACCESS METHODS AND THEREBY INSURE AGAINST OVERSIMPLIFIED ABSTRACTIONS WHICH TEND TO OVERESTIMATE PERFORMANCE. THE FILE DESIGNER CAN USE THESE TABLES TO OBTAIN QUANTITATIVE ESTIMATES OF PERFORMANCE FOR ANALOGIES TO HIS PROBLEM AND TO OBTAIN GENERAL INFORMATION WITH REGARD TO TRENDS AND DISCONTINUITIES IN ACCESS METHOD BEHAVIOR. THE TEXT CONTAINS DISCUSSIONS OF GENERALIZATIONS THAT APPEAR TO BE VALIDLY DERIVABLE FROM THE TABLES. FINALLY, IN SEVERAL INSTANCES, APPROXIMATE EQUATIONS HAVE BEEN PROVIDED TO FURTHER QUANTIFY THE GENERALIZATIONS FOR THE DESIGNER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-707 719 5/9 9/2
NAVAL PERSONNEL AND TRAINING RESEARCH LAB SAN DIEGO CALIF

HUMAN FACTORS METHODS DEVELOPMENT AND TEST: II. EVALUATION OF THE AUTOMATED OPERATIONAL SEQUENCE DIAGRAM (OSD). (U)

DESCRIPYIVE NOTE: RESEARCH MEMO.,
MAY 70 45P LARSON,ORVIN A. ;WILLIS, JOE E. ;
REPT. NO. SRM-70-17
PROJ: PF39.521.014.01.01

UNCLASSIFIED REPORT

DESCRIPTORS: (•PERSONNEL MANAGEMENT, DATA PROCESSING), (•NAVAL RESEARCH, MAN MACHINE SYSTEMS), SEQUENCES(MATHEMATICS), SYMBOLS, AUTOMATION, SYSTEMS ENGINEERING, QUESTIONNAIRES, HUMAN FACTORS ENGINEERING, JOB ANALYSIS, FLOW CHARTING (U)

THE REPORT DOCUMENTS AN EVALUATION OF AN AUTOMATED VERSION OF THE OPERATIONAL SEQUENCE DIAGRAM (OSD) FOR USE IN PERSONNEL RESEARCH. AUTOMATION OF THE OSD HEREIN REFERS TO THE USE OF ALPHANUMERIC CHARACTERS TO REPLACE GEOMETRIC SYMBOLS AND THE USE OF NON-COMPUTERIZED AUTOMATIC DATA PROCESSING (ADP) METHODS TO PRODUCE THE OSD. IN-HOUSE PERSONNEL RESEARCHERS WERE SURVEYED TO DETERMINE THE CURRENT USAGE OF OSDS AND THE USER PERCEIVED STRENGTHS AND WEAKNESSES OF OSDS FOR PERSONNEL RESEARCH. THREE VARIATIONS OF A BASIC AUTOMATED OSD WERE DEVELOPED AND EVALUATED. TWO OF THE AUTOMATED OSD FORMATS WERE EVALUATED BY APPLICATION TO NAVY WEAPON AND SUPPORT SYSTEMS WHICH WERE UNDER DEVELOPMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO: /ZHK13

AD-709 061 5/5
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

THE COLLECTION AND ANALYSIS OF HUMAN FACTORS DATA IN TASK ANALYSIS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS.
APR 70 52P KEMPF,RODNEY PAUL ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*JOB ANALYSIS, HUMAN FACTORS ENGINEERING), (*DATA PROCESSING, FEASIBILITY STUDIES), QUESTIONNAIRES, ANALYSIS OF VARIANCE, STATISTICAL PROCESSES, COMPUTER PROGRAMMING, NAVAL RESEARCH, THESES (U)

THE PAPER DEVELOPS A QUESTIONNAIRE TO BE USED IN DETERMINING THE NECESSITY OF VARIOUS HUMAN FACTORS TO THE SUCCESSFUL PERFORMANCE OF ANY PARTICULAR JOB. INCLUDED IN THE PROPOSED QUESTIONNAIRE ARE FIFTY-EIGHT CHARACTERISTICS AND A SCHEME FOR RATING THE VARIABLES. A PROGRAM IS DEVELOPED FOR ANALYZING THE DATA COLLECTED. A TWO-WAY ANALYSIS OF VARIANCE BY RANKS IS USED TO DETECT SIGNIFICANT DIFFERENCE BETWEEN THE CHARACTERISTICS, AND, GIVEN A DIFFERENCE EXISTS, A METHOD SIMILAR TO [illegible] MULTIPLE RANGE TEST IS EMPLOYED TO SEPARATE THE SEVERAL CHARACTERISTICS INTO SIGNIFICANCE GROUPS, THE VARIOUS GROUPS BEING RANKED ON AN ORDINAL SCALE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-709 460 1/4 5/5
UNITED AIRCRAFT CORP NORWALK CONN NORDEN DIV

INTEGRATED VERTICAL DISPLAY RESEARCH. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
JUL 70 158P WOODING,HAROLD C. , JR.;
SIMPSON,JOHN A. ;HARPER,H. ;SWEETNAM,R. ;
REPT. NO. 1161-R-0037
CONTRACT: NONR-4489(00)
PROJ: NR-213-036
MONITOR: JANAIR 680611

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SPONSORED IN PART BY NAVAL AIR SYSTEMS COMMAND, WASHINGTON, D. C., AND ARMY ELECTRONICS COMMAND, FORT MONMOUTH, N. J.

DESCRIPTORS: (*FLIGHT INSTRUMENTS, DISPLAY SYSTEMS), PROBLEM SOLVING, SYSTEMS ENGINEERING, EXPERIMENTAL DESIGN, SPECIFICATIONS, MODELS(SIMULATIONS), DATA PROCESSING, HUMAN FACTORS ENGINEERING, MISSION PROFILES, PERFORMANCE(HUMAN), STATISTICAL ANALYSIS, HELICOPTERS, JET AIRCRAFT, PERFORMANCE(ENGINEERING) (U)
IDENTIFIERS: CRITERIA, EVALUATION (U)

SIMULATION STUDIES WERE CONDUCTED WITH EIGHT CIVILIAN AND MILITARY PILOT SUBJECTS. A SERIES OF FLIGHT MANEUVERS WERE PERFORMED USING A HYPOTHETICAL TILT-WING VEHICLE, AND THE INTEGRATED ELECTRONIC VERTICAL DISPLAY (IEVD) WITH A SET OF CONVENTIONAL INSTRUMENTS. COMPREHENSIVE DATA ACQUISITION, COMPUTATION AND ONLINE PRINTOUT OF ERROR SCORES WERE UTILIZED. DATA REDUCTION AND STATISTICAL ANALYSIS ENSUED TO DETERMINE THE EFFICACY OF PERFORMANCE TO THE CRITERIA MODEL AND TO THE SET OF CONVENTIONAL INSTRUMENTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-710 396 5/9 9/2
NAVAL PERSONNEL AND TRAINING RESEARCH LAB SAN DIEGO CALIF

NEW SYSTEMS PERSONNEL REQUIREMENTS DATA SYSTEM (NSPRDS) COMPUTER SOFTWARE SUBSYSTEM DEVELOPMENTS. (U)

DESCRIPTIVE NOTE: RESEARCH MEMO.,
JUL 70 36P MEGLING,ROBERT C. ;
REPT. NO. SRM-71-3
PROJ: NPTRL-43-07X-85

UNCLASSIFIED REPORT

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, INFORMATION RETRIEVAL), (*NAVAL PERSONNEL, DATA PROCESSING), PERSONNEL MANAGEMENT, DATA STORAGE SYSTEMS, COMPUTER PROGRAMMING, MANAGEMENT PLANNING AND CONTROL, INPUT OUTPUT DEVICES, MAN MACHINE SYSTEMS, TRAINING, TIME, EFFECTIVENESS (U)
IDENTIFIERS: NEW SYSTEMS PERSONNEL REQUIREMENTS DATA SYSTEM, NSPRDS(NEW SYSTEMS PERSONNEL REQUIREMENTS DATA SYSTE, DATA BANKS (U)

A NEW PERSONNEL REQUIREMENTS SYSTEM IS BEING DEVELOPED FOR THE ORDERLY GENERATION, MAINTENANCE, UPDATING, AND APPLICATION OF DETAILED TASK ANALYSIS INFORMATION THROUGHOUT THE DEVELOPMENT CYCLE OF NAVY WEAPON AND SUPPORT SYSTEMS. THE PURPOSE OF THE RESEARCH REPORTED HEREIN WAS TO EVALUATE THE APPLICABILITY OF THE SYSTEM, TO MANIPULATE HUMAN FACTORS DATA IN A MODERN COMPUTER ENVIRONMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-711 807 5/9 5/8
NAVAL PERSONNEL AND TRAINING RESEARCH LAB SAN DIEGO CALIF

TASK ANALYSIS REDUCTION TECHNIQUE (TART) FOR THE QUANTIFICATION OF HUMAN PERFORMANCE. (U)

DESCRIPTIVE NOTE: RESEARCH MEMO.,
SEP 70 38P ELLIS,ROBERT H. ;
REPT. NO. SRM-71-7
PROJ: PF39.511.003.01.03

UNCLASSIFIED REPORT

DESCRIPTORS: (*MAN MACHINE SYSTEMS, ANTISUBMARINE WARFARE), (*PERFORMANCE(HUMAN), STATISTICAL ANALYSIS), HUMAN FACTORS ENGINEERING, FACTOR ANALYSIS, TACTICAL AIR SUPPORT, DATA PROCESSING, PERFORMANCE(HUMAN), SIMULATION, NAVAL RESEARCH, PERSONNEL MANAGEMENT (U)

A TASK ANALYSIS REDUCTION TECHNIQUE (TART) FOR COLLECTING HUMAN FACTORS INFORMATION WAS DEVELOPED AND APPLIED TO THE ANTI-SUBMARINE WARFARE TACTICAL DATA SYSTEM. TART IS A SPECIFIC PROCEDURE FOR ANALYZING THE MAN/MACHINE INTERFACE WHICH ALLOWS THE RESEARCHER TO ANALYZE SEQUENTIAL PROPERTIES OF THE MAN/MACHINE INTERACTION. THE TECHNIQUE IS BASED ON AN ANALYSIS OF THE INTERFACE AT A TASK LEVEL AND USES CLOSED CIRCUIT TELEVISION AND VIDEO TAPE RECORDING APPARATUS. A TRIAL APPLICATION WAS PERFORMED USING FOUR AIR DETECTOR/TRACKERS WHO WERE PRESENTED A ONE-HOUR AIR SCENARIO IN THE ANTI-SUBMARINE WARFARE TACTICAL DATA SYSTEM. THE RESULTS SECTION PRESENTS VARIOUS BREAKDOWNS OF THE TART DATA AND INDICATE THAT TART CAN PROVIDE VALUABLE INSIGHT INTO MAN/MACHINE DESIGN AND TRAINING EFFECTIVENESS DECISIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY · SEARCH CONTROL NO. /ZHK13

AD-712 695 9/2 5/8
RAND CORP SANTA MONICA CALIF

COMPARING BEHAVIOR AT VARIOUS COMPUTER DISPLAY CONSOLES IN TIME-SHARED LEGAL INFORMATION, (U)

SEP 70 45P CARLISLE,JAMES H. ;
REPT. NO. P-4448

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH YALE UNIV., NEW HAVEN, CONN.

DESCRIPTORS: (*INPUT OUTPUT DEVICES, *MAN MACHINE SYSTEMS), (*TIME SHARING, MAN MACHINE SYSTEMS), PERFORMANCE(HUMAN), REMOTE CONTROL, CONTROL PANELS, COMPUTERS, ANALYSIS OF VARIANCE, TELETYPE SYSTEMS, TELEVISION DISPLAY SYSTEMS, FACTOR ANALYSIS, HUMAN FACTORS ENGINEERING, TIME SHARING, UNIVERSITIES, LAW (U)
IDENTIFIERS: MAN COMPUTER INTERACTIONS, REMOTE COMPUTER CONSOLES (U)

THE OBJECTIVE OF THE RESEARCH METHODOLOGY PROJECT IS TO EXAMINE THE MAN-MACHINE INTERACTION WHICH TAKES PLACE AT THE REMOTE CONSOLE OF A TIME-SHARED COMPUTER. AN ANALYTICAL TECHNIQUE UTILIZING A MULTIVARIATE DISCRIMINATE ANALYSIS IS EMPLOYED IN ORDER TO COMPARE BEHAVIOR AT DIFFERENT CONSOLES. FROM THIS DISCRIMINATE ANALYSIS, SOME CRITICAL DIFFERENCES BETWEEN CONSOLES ARE IDENTIFIED AND MEASURED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-715 204 9/2 5/5
MASSACHUSETTS INST OF TECH CAMBRIDGE

TECHNICAL AND HUMAN ENGINEERING PROBLEMS IN CONNECTING TERMINALS TO A TIME-SHARING SYSTEM. (U)

70 8P OSSANNA,J. F. ;SALTZER,J. H. ;

CONTRACT: NONR-4102(01)

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN AFIPS CONFERENCE PROCEEDINGS, V37 P355-362 1970 FALL JOINT COMPUTER CONFERENCE.

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH BELL TELEPHONE LABS., INC., MURRAY HILL, N. J.

DESCRIPTORS: (*DATA PROCESSING, TIME SHARING), (*INPUT OUTPUT DEVICES, HUMAN FACTORS ENGINEERING), REMOTE CONTROL, DIGITAL COMPUTERS, TELETYPE SYSTEMS (U)
IDENTIFIERS: TELETYPE SYSTEMS (U)

TODAY, AN INCREASING NUMBER OF COMPUTER SYSTEMS ARE USED INTERACTIVELY BY THEIR USER COMMUNITIES. INTERACTIVE USE OF COMPUTERS, INVOLVING MORE PROLONGED MAN-MACHINE CONTACT THAN NON-INTERACTIVE USE, REQUIRES A WELL HUMAN ENGINEERED USER-SYSTEM INTERFACE. THE INTERACTIVE USER'S PERFORMANCE--HIS RATE OF DOING WORK AND HIS ABILITY AND DESIRE TO UTILIZE SYSTEM CAPABILITY--IS A SENSITIVE FUNCTION OF THE SUCCESS OF THIS HUMAN ENGINEERING. IN TURN, THE COMPUTER SYSTEM'S EFFECTIVENESS DEPENDS ON ACHIEVING A SATISFACTORY LEVEL OF USER PERFORMANCE WITH REASONABLE EFFICIENCY. THE PAPER IS CONCERNED WITH THE HUMAN ENGINEERING OF CONNECTING TYPEWRITER-LIKE TERMINALS TO GENERAL PURPOSE TIME-SHARING SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-716 473 5/9
ROWLAND AND CO HADDONFIELD N J

ANNUAL REPORT IN SUPPORT OF ADVANCED DEVELOPMENT OBJECTIVE 43-13, HUMAN FACTORS TECHNOLOGY. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 1, 1 DEC 69-30 NOV 70.
NOV 70 164P MARLOWE,EDWARD ;ESCOBAR, CARLOS ;ROWLAND,GEORGE E. ;
REPT. NO. R/C-70-11-105
CONTRACT: N00014-70-C-0126
PROJ: NR-154-319

UNCLASSIFIED REPORT

DESCRIPTORS: (*PILOTS, NAVAL TRAINING), (*PERSONNEL MANAGEMENT, DATA PROCESSING), (*PROGRAMMED INSTRUCTION, ADAPTIVE SYSTEMS), MANAGEMENT ENGINEERING, HUMAN FACTORS ENGINEERING, COMPUTER PROGRAMMING, TEACHING METHODS, SELECTION, TEST CONSTRUCTION(PSYCHOLOGY), MATHEMATICAL PREDICTION, SEQUENCES(MATHEMATICS) (U)
IDENTIFIERS: COMPUTER AIDED INSTRUCTION, DATA BANKS, *DATA MANAGEMENT (U)

THE REPORT DESCRIBES THE APPROACH USED AND THE PROGRESS MADE IN THE APPLICATION OF EXISTING KNOWLEDGE AND TECHNOLOGY TO THE TEST OF COMPUTERIZED TECHNIQUES WHICH INCORPORATE ADAPTIVE TRAINING CONCEPTSAND IMPROVED TECHNIQUES FOR THE PREDICTION OF NAVAL FLIGHT STUDENT TRAINING SUCCESS. BECAUSE THESE COMPUTERIZED TECHNIQUES REQUIRE A UNIQUE COMBINATION OF SPECIAL DATA INPUTS, DATA FILE ORGANIZATION, AND SPECIFIC COMPUTER SOFTWARE ROUTINES TO PROCESS THE FILE DATA, THIS COMBINATION IS CALLED A DATA MANAGEMENT SYSTEM. THE SYSTEM WILL CONSIST OF A NEWLY DEFINED DATA BANK AND FILE ORGANIZATION OF STUDENT PILOT SELECTION, PERFORMANCE AND ADMINISTRATIVE DATA; COMPUTERIZED TECHNIQUES FOR PROCESSING THESE DATA ARE DEVELOPED TO SUPPORT A SERIES OF FOURTEEN SYSTEM MODULES. WHEN IMPLEMENTED THE DATA MANAGEMENT SYSTEM IS EXPECTED TO PROVIDE IMPROVED PROCEDURES FOR THE HANDLING OF STUDENT PILOT TRAINING. THESE IMPROVED PROCEDURES CAN BE EXPECTED TO RESULT IN REDUCED ATTRITION IN THE FLIGHT SYLLABUS, MORE EFFECTIVE PLACEMENT OF STUDENTS IN THE PIPELINES, IN POSSIBLE CHANGES IN THE FLIGHT SYLLABUS CONTENT, FLIGHT HOURS, AND SYLLABUS DURATION FOR CERTAIN STUDENTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-718 383 5/5 5/10
APPLIED PSYCHOLOGICAL SERVICES INC WAYNE PA SCIENCE CE[illegible]R

MANUAL OF INSTRUCTIONS FOR THE ANALYTIC PROFILE SYSTEM. (U)

DEC 70 37P
REPT. NO. APS-7071-4
CONTRACT: N00014-66-C-0183
PROJ: NR-196-076

UNCLASSIFIED REPORT

DESCRIPTORS: (*DISPLAY SYSTEMS, HUMAN FACTORS ENGINEERING), (*PSYCHOLOGICAL TESTS, HUMAN FACTORS ENGINEERING), MAN MACHINE SYSTEMS, INSTRUCTION MANUALS, STATISTICAL PROCESSES, FACTOR ANALYSIS, CODING, DATA PROCESSING (U)
IDENTIFIERS: EVALUATION (U)

INFORMATION IS PRESENTED REGARDING THE APPLICATION, SCORING, AND INTERPRETATION OF THE ANALYTIC PROFILE SYSTEM, A PSYCHOMETRIC TECHNIQUE FOR PERFORMING A HUMAN FACTORS EVALUATION OF THE VISUAL DISPLAYS IN A MAN-MACHINE SYSTEM. A REVIEW OF THE RESEARCH PERFORMED DURING THE DEVELOPMENT OF THE TECHNIQUE IS INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-719 108 5/5 14/2
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND MD

HUMAN FACTORS. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.
DEC 70 22P
REPT. NO. MTP-7-3-510
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, TEST METHODS), TEST EQUIPMENT, NOISE, VISIBILITY, ENVIRONMENT, MILITARY FACILITIES, CONTROL SYSTEMS, DISPLAY SYSTEMS, INSTALLATION, RELIABILITY, MAINTENANCE, SAFETY, DATA PROCESSING (U)
IDENTIFIERS: *AVIONICS, *COMMON ENGINEERING TEST PROCEDURES, EVALUATION (U)

HUMAN FACTOR CONSIDERATIONS APPLICABLE TO AVIATION ARMAMENT AND AVIONICS ARE DESCRIBED.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-727 658 5/8
HUMAN RESOURCES RESEARCH ORGANIZATION ALEXANDRIA VA

MAN IN CONTROL OF HIGHLY AUTOMATED SYSTEMS. (U)

MAY 71 14P AMMERMAN,HARRY L. ;MELCHING, WILLIAM H. ;
REPT. NO. HUMRRO PROFESSIONAL PAPER-7-71
CONTRACT: DAHC19-70-C-0012

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE ANNUAL ARMY HUMAN FACTORS RESEARCH AND DEVELOPMENT CONFERENCE (16TH), FORT BLISS, TEXAS OCT 70.

DESCRIPTORS: (*PERFORMANCE(HUMAN), COMMAND + CONTROL SYSTEMS), (*AUTOMATION, *MAN-MACHINE SYSTEMS), CONTROL PANELS, DECISION MAKING, RELIABILITY, HUMAN ENGINEERING, FACTOR ANALYSIS (U)

THE IDENTIFICATION OF WHAT MAN SHOULD DO AS A DECISION MAKER AND CONTROLLER IN THE NEWLY EVOLVING MAN-MACHINE SYSTEMS IS CONSIDERED. AMONG THE TOPICS DISCUSSED ARE MAN'S UNDERLYING BASIC FUNCTIONS IN A COMPLEX SYSTEM, TASK ACTIVITIES FOR INDIVIDUAL JOBS AND THEIR ANALYSES, AND TRAINING AND THE DESIGN OF OPERATIONAL JOB POSITIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-728 529 5/8 5/9
OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

CONCERNING THE EVALUATION AND AGGREGATION OF PROBABILISTIC EVIDENCE BY MAN-MACHINE SYSTEMS, (U)

69 12P SCHUM,DAVID A. ;
CONTRACT: AF 33(615)-2248
PROJ: AF-7184
TASK: 718403
MONITOR: AMRL TR-69-143

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN PROCESSINGS OF THE CONGRESS ON INFORMATION SCIENCES AND TECHNOLOGY (3RD), P337-347.
SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH RICE UNIV., HOUSTON, TEX.

DESCRIPTORS: (*MAN-MACHINE SYSTEMS, *PERFORMANCE(HUMAN)), HUMAN ENGINEERING, AUTOMATION, PROBABILITY, DECISION THEORY, STATISTICAL ANALYSIS, PERFORMANCE TESTS, SIMULATION (U)
IDENTIFIERS: BAYES THEOREM, BAYESIAN ANALYSIS, INFORMATION PROCESSING(PSYCHOLOGY) (U)

THE REPORT DESCRIBES SOME OF THE FEATURES OF PRESENT RESEARCH ON MAN'S ROLE IN DIAGNOSTIC SYSTEMS AND DISCUSSES THE MANNER IN WHICH SYSTEM PERFORMANCE CRITERION PROBLEMS HAVE AFFECTED THESE EFFORTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-731 186 5/5 5/9 17/4
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OHIO

DISPLAY DESIGN FOR ELECTRONIC COUNTERMEASURES APPLICATION--SCOPE SIZE AND THREAT DENSITY. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. OCT 70-JAN 71,
JUL 71 29P THORBURN,DAVID E. ;SHARP, EARL D. ;KANA,WILLIAM N. ;LYONS,JOHN P. ;
REPT. NO. AMRL-TR-71-69
PROJ: AF-7184
TASK: 718410

UNCLASSIFIED REPORT

DESCRIPTORS: (•HUMAN ENGINEERING, •DISPLAY SYSTEMS), (•ELECTRONIC COUNTERMEASURES, DISPLAY SYSTEMS), RADAR EQUIPMENT, VIEWING SCREENS, PERFORMANCE(HUMAN), DESIG(U)
IDENTIFIERS: COMPUTER GRAPHICS (U)

SUBJECTS WERE REQUIRED TO IDENTIFY THREAT SYMBOLS ON A SIMULATED ELECTRONIC COUNTERMEASURES (ECM) SCOPE DISPLAY WHILE PERFORMING A SINGLE-AXIS, FIRST-ORDER, UNSTABLE COMPENSATORY TRACKING TASK. PERFORMANCE WITH 3- AND 4-INCH-DIAMETER DISPLAY SCOPES WAS COMPARED. A REPEATED-MEASURES EXPERIMENTAL DESIGN WAS USED INVOLVING TWO DIFFERENT 30-MINUTE TEST MISSIONS -- EACH VARYING IN THREAT DENSITY FROM 0 TO 18. TWENTY RIGHT-HANDED MALE COLLEGE STUDENTS SERVED AS SUBJECTS. BY COMPARING SUBJECT PERFORMANCE AT THE VARIOUS THREAT DENSITIES IT WAS DETERMINED THAT 7 WAS THE MAXIMUM NUMBER OF THREATS THAT A SUBJECT COULD EFFECTIVELY PROCESS WITH EACH SCOPE SIZE. RESULTS SHOWED NO STATISTICALLY SIGNIFICANT DIFFERENCE IN PERFORMANCE BETWEEN THE 3-INCH AND THE 4-INCH SCOPES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-734 432 5/8
BUNKER-RAMO CORP WESTLAKE VILLAGE CALIF ELECTRONIC SYSTEMS DIV

COMPARATIVE ANALYSIS OF HUMAN RELIABILITY MODELS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
NOV 71 481P MEISTER,DAVID ;
REPT. NO. LOO74-1U7
CONTRACT: N00024-71-C-1257

UNCLASSIFIED REPORT

DESCRIPTORS: (*PERFORMANCE(HUMAN), MATHEMATICAL PREDICTION), (*MAN-MACHINE SYSTEMS, PERFORMANCE(HUMAN)), RELIABILITY, DATA PROCESSING SYSTEMS, DATA STORAGE SYSTEMS, HUMAN ENGINEERING, FACTOR ANALYSIS, MAINTAINABILITY, SIMULATION (U)
IDENTIFIERS: RECOMMENDATIONS, *DATA BANKS, EVALUATION (U)

THE PURPOSE OF THE STUDY WAS TO DESCRIBE, ANALYZE AND COMPARE AVAILABLE MODELS AND METHODS FOR MAKING QUANTITATIVE PREDICTIONS OF HUMAN PERFORMANCE IN MAN-MACHINE SYSTEMS. THE 22 METHODS REVIEWED WERE DIVIDED INTO THOSE RELATING TO OPERABILITY AND MAINTAINABILITY; OPERABILITY MODELS FURTHER SUBDIVIDE INTO ANALYTIC (NON-SIMULATION) AND SIMULATION MODELS. EACH MODEL WAS ANALYZED IN TERMS OF GOALS, ASSUMPTIONS, SCOPE, PARAMETERS, DATA REQUIREMENTS, PROCEDURES AND VALIDATION/APPLICATION STUDIES. THE REPORT PROVIDES REQUIREMENTS FOR DEVELOPMENT OF INPUT DATA BANKS AND DATA PRESENTATION FORMATS. THE MOST RECENT STUDIES AND THE STATE OF THE ART OF HUMAN RELIABILITY PREDICTION ARE REVIEWED. RECOMMENDATIONS FOR FURTHER RESEARCH ARE MADE, CENTERING AROUND A SURVEY OF USER NEEDS FOR PREDICTIVE DATA. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-736 868 5/10 5/8
HUMAN ENGINEERING LABS ABERDEEN PROVING GROUND MD

EXPERIMENTS UTILIZING COMMAND/CONTROL SIMULATOR. I. ON-LINE PARTIAL DATA REDUCTION IN REACTION TIME EXPERIMENTS. (U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,
DEC 71 31P DAVIS,C. JANE ;
REPT. NO. HEL-TN-5-71

UNCLASSIFIED REPORT

DESCRIPTORS: (*REACTION(PSYCHOLOGY), REFLEXES), (*SIMULATORS, PERFORMANCE(HUMAN)), COMMAND AND CONTROL SYSTEMS, DATA PROCESSING, DISPLAY SYSTEMS, COMPUTER PROGRAMS, HUMAN FACTORS ENGINEERING (U)
IDENTIFIERS: ON LINE SYSTEMS, DATA REDUCTION (U)

REACTION TIME EXPERIMENTS WERE CONDUCTED ON A COMMAND/CONTROL SIMULATOR SYSTEM. THE SYSTEM CONSISTS OF THREE COMPUTER-DRIVEN DISPLAYS WITH PERIPHERAL CONTROL DEVICES. A PROGRAM FOR ON-LINE PARTIAL DATA REDUCTION DURING EXPERIMENTAL RUNS WAS DEVELOPED. THIS PROGRAM WAS WRITTEN FOR THE VARIAN 620 I AND IS ADAPTABLE TO SIMILAR MINI-COMPUTERS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-737 266 9/2 17/2
ANALYTICS INC ARLINGTON VA

AN INVESTIGATION INTO SOFTWARE STRUCTURES FOR MAN/MACHINE INTERACTIONS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
FEB 72 87P NICHOLSON,RICHARD M. ;
WIGGINS,BRYAN D. ;SILVER,CARL A. ;
CONTRACT: N00014-71-C-0283
PROJ: NR-196-103

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING, NAVAL OPERATIONS), (*COMMAND AND CONTROL SYSTEMS, HUMAN FACTORS ENGINEERING), (*COMPUTER PROGRAMMING, INFORMATION RETRIEVAL), MAN MACHINE SYSTEMS, DECISION MAKING (U)
IDENTIFIERS: MAN MACHINE SYSTEMS, *MANAGEMENT INFORMATION SYSTEMS, INFORMATION SYSTEMS (U)

THE CURRENT TREND IN COMMAND AND CONTROL/ INFORMATION SYSTEMS WITHIN THE NAVY, TOWARD GREATER USE OF INTERACTIVE CAPABILITIES, HAS THE EFFECT OF BRINGING THE TRUE 'USER'--THE DECISION-MAKER--INTO DIRECT CONTACT WITH THE SYSTEM, RATHER THAN USING A PROGRAMMER AS AN INTERMEDIARY. IT IS THEREFORE NECESSARY THAT THE SYSTEM DESIGNER ORIENT THE MAN/ MACHINE COMMUNICATION LESS TOWARD HIS OWN PROGRAMMING COMMUNITY AND MORE TOWARD A USER WHOSE FAMILIARITY WITH COMPUTER DEVICES AND TERMINOLOGY IS SOMEWHAT LESS THAN HIS OWN. FOR A CLEAR VIEW OF THE TYPICAL USER AND THE FUNCTIONS HE AND THE SYSTEM PERFORM, A SURVEY OF RECENT NAVY SYSTEMS IS DESCRIBED. A REVIEW OF THE LITERATURE IN INFORMATION SYSTEMS TO DETERMINE THE AVAILABILITY OF INFORMATION USEFUL TO THE SYSTEM DESIGNER IN INTERACTIVE SOFTWARE PERFORMANCE IS PRESENTED. FINALLY, A RESEARCH PROGRAM TO DERIVE THE NEEDED INFORMATION IS PROPOSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-738 322 5/10 5/2
BUNKER-RAMO CORP WESTLAKE VILLAGE CALIF

DEVELOPMENT OF A HUMAN PERFORMANCE RELIABILITY DATA SYSTEM: PHASE I. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 71 163P MEISTER,DAVID ;MILLS,ROBERT G. ;
CONTRACT: F33615-70-C-1518
PROJ: AF-7184
TASK: 718409
MONITOR: AMRL TR-71-87

UNCLASSIFIED REPORT

DESCRIPTORS: (*PERFORMANCE(HUMAN), *RELIABILITY), (*DATA PROCESSING, *HUMAN FACTORS ENGINEERING), (*MAN MACHINE SYSTEMS, *INFORMATION RETRIEVAL), CLASSIFICATION (U)

THE HUMAN PERFORMANCE RELIABILITY (HPR) DATA SYSTEM DEVELOPED CONSISTS OF ASSUMPTIONS, GOALS AND DEFINITIONS, A STRUCTURE FOR CLASSIFYING DATA ELEMENTS, PROCEDURES FOR DEVELOPING A DATA BANK AND PROCEDURES FOR RETRIEVING HPR DATA FROM THAT BANK. THE HEART OF THE HPR SYSTEM IS A TAXONOMIC STRUCTURE FOR CLASSIFYING BOTH GENERAL BEHAVIORAL AND MAN-MACHINE SPECIFIC STUDIES. STUDIES ARE CLASSIFIED IN TERMS OF/THE BEHAVIORAL FUNCTION PERFORMED, THE STIMULI PRESENTED AND THE EQUIPMENT USED TO RESPOND, ENVIRONMENTAL, SUBJECT AND TASK CHARACTERISTICS. THE END PRODUCT OF THE CLASSIFICATION IS A DESCRIPTOR USED TO RETRIFVE DATA. DATA ARE RETRIEVED BY FIRST ENCODING A QUESTION ASKED OF THE HPR SYSTEM, I.E. BY TRANSLATING THE QUESTION/INTO DESCRIPTOR CATEGORIES. THE SYSTEM THEN OPERATES ON THE BASIS OF 'AND/OR' LOGIC TO SORT PROGRESSIVELY THROUGH THE VARIOUS CATEGORIES TO ACHIEVE THE CLOSEST POSSIBLE MATCH WITH THE ENTRY DESCRIPTOR. THUS, THE PRECISE ANSWER TO THE QUESTION ASKED CAN BE RETRIEVED, ASSUMING THAT THE DATA BANK CONTAINS APPROPRIATE DATA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-752 800 5/8
DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA

MAN-MACHINE INTERACTION. (U)

DESCRIPTIVE NOTE: REPORT BIBLIOGRAPHY DEC 53-MAR 72.
NOV 72 238P
REPT. NO. DDC-TAS-72-71

UNCLASSIFIED REPORT

DESCRIPTORS: (*MAN MACHINE SYSTEMS, *BIBLIOGRAPHIES), INTERACTIONS, HUMAN FACTORS ENGINEERING, ADAPTIVE CONTROL SYSTEMS, ADAPTIVE SYSTEMS, CONTROL SYSTEMS, COMPUTERS, DECISION MAKING, FLIGHT CONTROL SYSTEMS, PERFORMANCE(HUMAN), PERFORMANCE(ENGINEERING), PILOTS, PERSONNEL MANAGEMENT, SYSTEMS ENGINEERING, ARTIFICIAL INTELLIGENCE (U)

THE ANNOTATED REFERENCES INCLUDE REPORTS WHICH STUDY THE HUMAN FACTORS INVOLVED IN SOLVING AND LEARNING MAN-MACHINE INTERACTIONS, AS WELL AS THE EFFECTIVE USE OF MEN IN SYSTEM DESIGN. THE INDEXES INCLUDED ARE CORPORATE AUTHOR-MONITORING AGENCY, AND SUBJECT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-753 748 5/8 17/9 9/2
ILLINOIS UNIV SAVOY AVIATION RESEARCH LAB

VISUAL TIME COMPRESSION: I. PROGRAMMED LOGIC FOR AUTOMATED TEMPORAL EXPERIMENTATION, (U)

72 9P SCANLAN,LAWRENCE A. ;HUMMEL, TERRY L. ;
REPT. NO. ARL-72-30/AFOSR-72-18
CONTRACT: F44620-70-C-0105
PROJ: AF-9778
MONITOR: AFOSR TR-72-2437

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN PROCEEDINGS OF THE ANNUAL MEETING OF HUMAN FACTORS SOCIETY (16TH), LOS ANGELES, CALIF., 17-19 OCT 72 P160-165 1972.
SUPPLEMENTARY NOTE: SEE ALSO AD-753 746.

DESCRIPTORS: (*DISPLAY SYSTEMS, *RADAR SIGNALS), TIME, BRIGHTNESS, COMPUTERS, HUMAN FACTORS ENGINEERING, RECORDING SYSTEMS (U)

APPARATUS FOR THE AUTOMATIC PRESENTATION OF VISUALLY TIME-COMPRESSED STIMULI IS DESCRIBED. THE SYSTEM CONSISTS OF A COMPUTER-CONTROLLED VIDEO TAPE RECORDER AND ASSOCIATED HARDWARE AND SOFTWARE. STEPS INVOLVED IN THE GENERATION OF VIDEO TAPE RECORDINGS DEPICTING MOVING TARGETS IN RADAR CLUTTER ARE DESCRIBED. RECORDINGS WERE FURTHER TRANSFORMED TO OBTAIN TIME-COMPRESSED DISPLAYS HAVING DIFFERENT TIME-COMPRESSION RATIOS AND TARGET BRIGHTNESS LEVELS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-753 864 5/5 6/11
ROYAL AIRCRAFT ESTABLISHMENT FARNBOROUGH (ENGLAND)

A PROJECTED GRID METHOD FOR RECORDING THE SHAPE OF THE HUMAN FACE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
SEP 71 33P COBB,J. ;
REPT. NO. RAE-TR-71184
MONITOR: DRIC BR-28791

UNCLASSIFIED REPORT

DESCRIPTORS: (*FACE(ANATOMY), ANTHROPOMETRY), (*ANTHROPOMETRY, DATA PROCESSING), (*OXYGEN MASKS, DESIGN), CONFIGURATION, HUMAN FACTORS ENGINEERING, INSTRUMENTATION, EXPERIMENTAL DESIGN (U)
IDENTIFIERS: *GRID METHOD (U)

THE REPORT DESCRIBES THE WORK CARRIED OUT TO DESIGN AN EQUIPMENT WHICH WOULD QUICKLY AND CHEAPLY RECORD THE SHAPES OF A LARGE NUMBER OF HUMAN FACES. IT IS INTENDED FOR USE IN AN ANTHROPOMETRIC SURVEY WITH A VIEW TO PROVIDING DATA FOR A PROJECT AIMED AT IMPROVING THE FIT AND COMFORT OF OXYGEN MASKS FOR SERVICE USE. THE DATA WILL BE EXAMINED TO DISCOVER A PARAMETER OF THE HUMAN FACE WHICH CAN BE USED TO DETERMINE WHICH MASK SIZE IS BEST SUITED TO ANY INDIVIDUAL. A SIMPLE, QUICK AND ADEQUATELY ACCURATE EQUIPMENT FOR RECORDING ONE SIDE OF THE FACE HAS BEEN DEVELOPED FROM AN EARLIER DESIGN AND INCLUDES SEVERAL REFINEMENTS TO SIMPLIFY THE ANALYSIS. THE ACCURACY OF THE EQUIPMENT HAS BEEN MEASURED AND IS WITHIN THE REQUIRED ONE MILLIMETRE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-754 141 5/9
ROWLAND AND CO HADDONFIELD N J

ANNUAL REPORT IN SUPPORT OF ADVANCED DEVELOPMENT OBJECTIVE 43-13; HUMAN FACTORS TECHNOLOGY. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 3, 16 MAY-15 NOV 72, ON PHASE 1,
NOV 72 125P ROWLAND,GEORGE E. ;MARLOWE, EDWARD ;ESCOBAR,CARLOS ;GOEL,SHULLY M. ; MONTEMERLO,MELVIN ;
REPT. NO. R/C-72-11-111
CONTRACT: N00014-72-C-0520
PROJ: NR-154-353

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED 15 MAY 72, AD-744 984.

DESCRIPTORS: (*PILOTS, *NAVAL TRAINING), (*PERFORMANCE(HUMAN), *DATA PROCESSING), HUMAN FACTORS ENGINEERING, PERSONNEL MANAGEMENT, FEEDBACK, PROGRAMMED INSTRUCTION, STUDENTS, MANAGEMENT ENGINEERING, ADAPTIVE SYSTEMS, DECISION MAKING, COMPUTER PROGRAMMING (U)
IDENTIFIERS: *DATA MANAGEMENT (U)

THE REPORT DESCRIBES THE CONTINUED DEVELOPMENT OF A DATA MANAGEMENT SYSTEM (DMS) AND A STUDENT MANAGEMENT SYSTEM (SMS) FOR USE IN THE NAVAL STUDENT PILOT TRAINING PROGRAM. THE SMS WILL BE SQUADRON-BASED AND WILL SECURE, PROCESS AND FEED BACK STUDENT TRAINING PROGRESS AND OUTCOME PERFORMANCE DATA TO SQUADRON PERSONNEL. THIS SYSTEM WILL IMPROVE THE DECISION-MAKING INVOLVED IN THE MANAGEMENT OF THE STUDENT AVIATOR. A FAMILY OF FEEDBACK PRODUCTS WAS DEVELOPED. PROVISIONS FOR ADAPTIVE TRAINING ARE DISCUSSED. THE CAPABILITIES AND LIMITATIONS OF CURRENT TECHNIQUES IN THE HANDLING OF STUDENT PILOTS AND THE AVAILABILITY OF NEW OPTIONS ARE DESCRIBED. THE LIMITATIONS IMPOSED BY NORM-REFERENCED MEASUREMENT DATA ARE CITED. OPTIONS FOR THE DEVELOPMENT OF CRITERION-REFERENCED MEASURES ARE IDENTIFIED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-754 215 5/5
ILLINOIS UNIV SAVOY AVIATION RESEARCH LAB

EXPERIMENT SIMULATION. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 72 60P SIMON,CHARLES W. ;
REPT. NO. ARL-72-7/AFOSR-72-3
CONTRACT: F44620-70-C-0105
PROJ: AF-9778
MONITOR: AFOSR TR-72-2468

UNCLASSIFIED REPORT

DESCRIPTORS: (*MAN MACHINE SYSTEMS, SIMULATION), (*HUMAN FACTORS ENGINEERING, SIMULATION), DATA PROCESSING, REGRESSION ANALYSIS, EXPERIMENTAL DESIGN, MATHEMATICAL MODELS (U)
IDENTIFIERS: COMPUTERIZED SIMULATION (U)

ALTHOUGH THE TRADITIONAL EXPERIMENTAL TECHNIQUES EMPLOYED BY BEHAVIORAL SCIENTISTS ARE CONSIDERED INADEQUATE FOR APPLIED STUDIES OF HUMANS OPERATING WITHIN A MAN-MACHINE SYSTEM, RESEARCHERS HAVE BEEN RELUCTANT TO ADOPT IMPROVED METHODOLOGIES. THIS RELUCTANCE IS ATTRIBUTED TO INADEQUATE MEANS OF EVALUATING THOSE METHODOLOGIES IN CURRENT USE AND TO INVESTIGATORS' LACK OF EXPERIENCE WITH NEW METHODOLOGIES. IT IS PROPOSED THAT A COMPUTER PROGRAM WHICH SIMULATES DATA GENERATED BY LABORATORY EXPERIMENTS CAN RESOLVE BOTH THESE PROBLEMS QUICKLY AND ECONOMICALLY. THE PRIMARY PURPOSE OF THE CURRENT PAPER IS TO ESTABLISH THAT SUCH A MODEL FOR EXPERIMENT SIMULATION CAN BE DEVELOPED. THE REPORT OUTLINES THE BASIC CHARACTERISTICS OF THE SIMULATION MODEL, WHICH ASSUMES THE FORM OF A POLYNOMIAL REGRESSION EQUATION. NEXT IT IDENTIFIED AND DISCUSSES MANY OF THE FACTORS THAT USUALLY OPERATE IN HUMAN FACTORS ENGINEERING EXPERIMENTS.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-757 627 5/2 5/5
ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

INITIAL REPORT ON SYSTEMIZING INFORMATION TO IDENTIFY AND RELATE BEHAVIORAL AND PHYSICAL DESIGN PARAMETERS. (U)

DESCRIPTIVE NOTE: PRELIMINARY REPT.,
MAR 73 8P DRESSEL,DAVID L. ;BRAUER, ROGER L. ;
REPT. NO. CERL-PR-D-4
PROJ: DA-4-A-062103-A-891

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON IDENTIFICATION AND CLASSIFICATION OF HUMAN HEEDS IN THE MILITARY FACILITY.

DESCRIPTORS: (*INFORMATION RETRIEVAL, HUMAN FACTORS ENGINEERING), (*HUMAN FACTORS ENGINEERING, MILITARY FACILITIES), BUILDINGS, DESIGN, BEHAVIOR, COMPUTERS (U)
IDENTIFIERS: *INFORMATION SYSTEMS (U)

THE PRELIMINARY REPORT SUMMARIZES PROGRESS TO DATE ON DEVELOPMENT OF AN INFORMATION SYSTEM TO SERVICE THE IDENTIFICATION AND CLASSIFICATION OF HUMAN NEEDS IN THE MILITARY FACILITY. THE SYSTEM WILL BE USED TO DEVELOP INFORMATION FOR DESIGN DECISIONS. AT PRESENT, BEHAVIORAL AND DESIGN THEORIES HAVE BEEN REVIEWED, AND HAVE PLAYED AN IMPORTANT PART IN FORMULATING THE PILOT INFORMATION SYSTEM. THE SYSTEM IS RESPONSIVE TO THE REQUIREMENTS OF BOTH THE RESEARCHER AND THE DESIGNER, WITH DATA CATEGORIZED AND TRANSLATED THROUGH THE 'RELATIONSHIP SENTENCE.' AMENABLE TO COMPUTER INPUT, STORAGE AND DATA RETRIEVAL, THE RELATIONSHIP SENTENCE IS A STATEMENT OF RELATION BETWEEN CONSTRAINTS, USER ACTIVITIES, AND PHYSICAL CHARACTERISTICS. THE STRUCTURE OF THE RELATIONSHIP SENTENCE IS THOUGHT TO BE COMPLETE ENOUGHFOR EASY GATHERING OF DATA FROM EXISTING STUDIES, YET SUFFICIENTLY FLEXIBLE TO ALLOW CATEGORIZATION OF BEHAVIORAL DATA IN VARYING DEGREES OF EXPLICITNESS. THE OUTPUT FROM THE SYSTEM IS INTENDED TO BE COMPATIBLE WITH DEVELOPING COMPUTER-AIDED DESIGN PROGRAMS, IF NOT AN INTEGRAL PART OF SUCH PROGRAM. DISCUSSED IN THIS REPORT IS THE STRUCTURE AND FUNCTION OF THE INFORMATION SYSTEM, ITS RELATION TO INFORMATION SCIENCE AND COMPUTER-AIDED ARCHITECTURE, AND WORK REQUIRED FOR ITS FURTHER DEVELOPMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-758 977 22/2 1/3 5/8
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT
PARIS (FRANCE)

AUTOMATION IN MANNED AEROSPACE SYSTEMS. (U)

DESCRIPTIVE NOTE: CONFERENCE PROCEEDINGS NO. 114.
MAR 73 323P
REPT. NO. AGARD-CP-114

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO FURNISHED.

DESCRIPTORS: (*AEROSPACE CRAFT, *MAN MACHINE SYSTEMS), AUTOMATION, DATA PROCESSING, ATTITUDE CONTROL SYSTEMS, NAVIGATIONAL AIDS, COMPUTERS, MANNED SPACECRAFT, FLIGHT INSTRUMENTS, HUMAN FACTORS ENGINEERING (U)
IDENTIFIERS: AVIONICS (U)

THE CONTINUOUS EXPANSION OF AEROSPACE SYSTEM REQUIREMENTS RESULTS IN THE EVER INCREASING ASSIGNMENT OF COMPUTING, LOGIC AND DECISION MAKING FUNCTIONS TO 'ON-BOARD' DIGITAL COMPUTERS. THE NEED FOR MAN AS AN INTEGRAL ELEMENT IN AEROSPACE SYSTEMS SEEMS LIKELY FOR THE NEXT DECADE. HIS ROLE AND THE PROPER INTEGRATION OF MAN AND MACHINE FOR MAXIMUM SYSTEM EFFECTIVENESS WILL, HOWEVER, REQUIRE PERIODIC RE-EXAMINATION IN VIEW OF THE GROWING CAPABILITY OF THE MACHINE TO ASSUME FUNCTIONS PREVIOUSLY RESERVED FOR MAN. THE REPORT CONSIDERS THE CURRENT CAPABILITIES AND POTENTIALS FOR AUTOMATING MANNED AEROSPACE SYSTEMS, AND DESCRIBED THE 'TOOLS' CURRENTLY AVAILABLE AND UNDER DEVELOPMENT FOR ASSIGNING SYSTEM FUNCTIONS TO MAN, MACHINE AND MAN AND MACHINE, SO AS TO BEST SATISFY AEROSPACE SYSTEM REQUIREMENTS AND CONSTRAINTS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-761 518 5/10 5/5
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

ANALYSIS OF A DESCRIPTIVE MODEL FOR HAND MOTION DISTANCE IN A MANUAL DECISION TASK. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
MAR 73 56P STEWART,JOSEPH STANLEY , II;

UNCLASSIFIED REPORT

DESCRIPTORS: (*HANDS, *MOTOR REACTIONS), (*DECISION MAKING, PERFORMANCE(HUMAN)), (*INSTRUMENT PANELS, *HUMAN FACTORS ENGINEERING), UNCERTAINTY, MATHEMATICAL MODELS, PERCEPTION, DATA PROCESSING, TEST EQUIPMENT, TEST METHODS, ANALYSIS OF VARIANCE, PERFORMANCE(HUMAN), STATISTICAL PROCESSES, DESIGN, THESES (U)
IDENTIFIERS: STIMULUS RESPONSE (U)

AN EXPERIMENTAL INVESTIGATION WAS CONDUCTED TO EXAMINE A DESCRIPTIVE MODEL FOR HAND MOTION UNDER DISCRETE UNCERTAINTY OF THE STIMULUS SET. THE DESIGN AND IMPLEMENTATION OF AN AUTOMATIC, ON-LINE, DATA COLLECTION DEVICE USING CYCLEGRAPHIC MOTION COLLECTION METHODS IS DESCRIBED. EIGHT SUBJECTS WERE EXPOSED TO 2.2 TO 3 BITS OF CHOICE UNCERTAINTY. RESPONSE TIMES, ERROR RATES, AND HAND MOTION DISTANCES WERE COLLECTED AND ANALYZED. HAND MOTION DISTANCES WERE COMPARED TO STRAIGHT LINE DISTANCES USED IN CONTROL PANEL DESIGN. FURTHER INVESTIGATION INDICATED HOW THE DISTRIBUTIONS OF HAND MOTION DISTANCES, FOR ANY STIMULUS, FIT NORMAL CURVES, AND HOW VARIATIONS IN SUBJECT PERFORMANCE WERE SIGNIFICANT. PERCEPTUAL ASPECTS OF THE TASK AND OPERATOR STRATEGIES ARE DISCUSSED. FURTHER STUDY IS SUGGESTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-763 392 5/9
CALIFORNIA UNIV BERKELEY INST OF INDUSTRIAL RELATIONS

DEVELOPMENT OF RESEARCH INSTRUMENTS AND PROCEDURES FOR STUDYING THE HUMAN RESOURCES OF DEVELOPING AND OPERATING ORGANIZATIONS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. NO. 4,
MAY 73 25P BLOOD,MILTON R. ;
CONTRACT: N00014-69-A-0200-1054

UNCLASSIFIED REPORT

DESCRIPTORS: (*NAVAL AVIATION, *PERSONNEL MANAGEMENT), (*ORGANIZATIONS, *HUMAN FACTORS ENGINEERING), RESEARCH MANAGEMENT, DATA PROCESSING, QUESTIONNAIRES, PERSONALITY, BACKGROUND, PSYCHOLOGICAL TESTS, SOCIAL COMMUNICATION, MANAGEMENT PLANNING AND CONTROL, JET FIGHTERS, OPTIMIZATION (U)
IDENTIFIERS: F-14 AIRCRAFT, *HUMAN RESOURCES (U)

A PRELIMINARY DATA COLLECTION WAS CARRIED OUT TO TEST THE QUESTIONNAIRE AND DATA COLLECTION PROCEDURES TO BE USED IN A LARGER PSYCHOLOGICAL STUDY OF THE HUMAN RESOURCES OF ORGANIZATIONS. A NAVY FIGHTER SQUADRON WAS CHOSEN SINCE THE EVENTUAL STUDY WILL BE CONDUCTED IN THE FIRST FIGHTER SQUADRONS OF THE NAVY F-14 PROGRAM. THE REPORT IS A PURELY DESCRIPTIVE ACCOUNT OF THE INSTRUMENT DEVELOPMENT. IT PRESENTS SOME RESULTS OF THE PRELIMINARY DATA COLLECTION. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-765 204 9/2 5/1
AIR FORCE ACADEMY COLO DEPT OF ASTRONAUTICS AND COMPUTER SCIENCE

PROCEEDINGS OF THE ANNUAL WORLDWIDE DATA BASE MANAGEMENT SYSTEM SYMPOSIUM (3RD) HELD AT THE UNITED STATES AIR FORCE ACADEMY ON 24-26 JANUARY 1973. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JAN 73 252P WINKLER,ANTHONY J. ;GERSON, GORDON M. ;
REPT. NO. DFACS-73-CS-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED DEC 71, AD-742 323.

DESCRIPTORS: (*DATA PROCESSING, MANAGEMENT PLANNING AND CONTROL), AIR FORCE RESEARCH, SYSTEMS ENGINEERING, HUMAN FACTORS ENGINEERING, COMPUTER PROGRAMMING, SELECTION, PERSONNEL MANAGEMENT, SYMPOSIA (U)
IDENTIFIERS: ON LINE SYSTEMS, INFORMATION SYSTEMS, DATA MANAGEMENT (U)

;CONTENTS: AN EVOLUTIONARY APPROACH TO THE DEVELOPMENT OF DATA BASE MANAGEMENT SYSTEMS; SPECIAL PURPOSE DESIGN - A HUMAN FACTOR APPROACH; THE AIR FORCE COMPUTER SELECTION PROCESS; INFORMATION SYSTEMS RESEARCH FOR THE FUTURE; THE APPLICATION OF A GDBMS TO SUPPORT THE DATA ADMINISTRATOR FUNCTIONS; THE ADPS/BLMPS TAILORED DATA MANAGEMENT SYSTEM; DATA ELEMENT RECONCILIATION AND FILE STRUCTURING TECHNIQUE FOR MAC'S WWMCCS ON-LINE DATA BASE; AIR FORCE ON-LINE DATA SYSTEM; STATUS OF THE SYSTEM SURVEY TEAM. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-767 206 5/5 13/12
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OHIO

COMBIMAN-COMPUTERIZED BIOMECHANICAL MAN-MODEL. COMBIMAN-BIOMECHANISCHES COMPUTER-MODELL DES MENSCHEN, (U)

72 18P KROEMER,K. H. E. ;
REPT. NO. AMRL-TR-72-16
PROJ: AF-7184
TASK: 718408

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN PROCEEDINGS OF IFU COLLOQUIUM 'SPACE TECHNOLOGY - A MODEL FOR SAFETY TECHNIQUES AND ACCIDENT PREVENTION', COLOGNE, GERMANY, APR 72 P73-88.
SUPPLEMENTARY NOTE: SUMMARY IN GERMAN.

DESCRIPTORS: (*HUMAN BODY, MODELS(SIMULATIONS)), (*HUMAN FACTORS ENGINEERING, AIRCRAFT), COMPUTERS, ANTHROPOMETRY, ERGOMETERS, MATHEMATICAL MODELS (U)
IDENTIFIERS: *BIOMECHANICS (U)

A COMPUTERIZED BODY ANALOG, REPRESENTING ANTHROPOMETRY, BIOMECHANICS, AND ERGONOMICS, WILL BE USEFUL IN EVALUATING EXISTING SYSTEMS AND IN THE FUTURE WILL BE ESSENTIAL FROM THE EARLIEST STAGES IN THE DEVELOPMENT OF NEW SYSTEMS. SUCH AN ANALOG OF THE HUMAN OPERATOR, WITHIN THE GEOMETRY OF THE WORK STATION, IS CURRENTLY BEING DEVELOPED. IT IS CALLED COMBIMAN, AN ACRONYM FOR COMPUTERIZED BIOMECHANICAL MAN-MODEL. COMBIMAN IS AN ENGINEERING TOOL FOR REPRESENTING THE GEOMETRY AND PHYSICS OF THE MAN-COCKPIT SYSTEM. THIS PAPER SUMMARIZES A LITERATURE REVIEW, PRESENTS A GENERAL DISCUSSION OF COMPUTER MODELS REPRESENTING THE GEOMETRY OF THE OPERATOR AT HIS WORK STATION, DEVELOPS A STRATEGY OF THE MATHEMATICAL AND COMPUTERIZATION CONCEPTS, AND DESCRIBES THE DEVELOPMENT PHASES OF COMBIMAN. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-767 739 5/5
HUGHES AIRCRAFT CO CULVER CITY CALIF

ECONOMICAL MULTIFACTOR DESIGNS FOR HUMAN FACTORS ENGINEERING EXPERIMENTS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 73 189P SIMON,CHARLES W. ;
REPT. NO. HAC-P73-326
CONTRACT: F44620-72-C-0086
PROJ: AF-9778
MONITOR: AFOSR TR-73-1702

UNCLASSIFIED REPORT

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, FACTOR ANALYSIS), SELECTION, EXPERIMENTAL DATA, DATA PROCESSING, OPTIMIZATION, COSTS, MAN MACHINE SYSTEMS, RESEARCH MANAGEMENT, MANAGEMENT PLANNING AND CONTROL, ERRORS (U)
IDENTIFIERS: CONCEPTS, ECONOMICAL MULTIFACTOR DESIGNS (U)

EXPERIMENTAL DATA COLLECTION PLANS ARE DESCRIBED THAT PERMIT THE STUDY OF FROM FIVE TO THIRTY EXPERIMENTAL HUMAN FACTORS. THE REPORTED PLANS WERE SELECTED FROM THOSE EMPLOYED IN PHYSICAL SCIENCE RESEARCH AND WERE SUITABLE FOR HUMAN FACTORS ENGINEERING RESEARCH. THE METHOD OF EMPLOYING THESE DESIGNS IS TWO PHASE. IN THE FIRST PHASE, A LARGE NUMBER OF POTENTIALLY CRITICAL FACTORS ARE SYSTEMATICALLY SCREENED IN A WAY THAT IDENTIFIES THE MORE IMPORTANT ONES. IN THE SECOND, FUNCTIONS ARE OBTAINED THAT RELATE THE MORE IMPORTANT QUANTITATIVE FACTORS TO OPERATE PERFORMANCE. FIVE PRINCIPLES THAT ENABLE ECONOMICAL MILTIFACTOR HUMAN FACTORS EXPERIMENTS TO BE SUCCESSFULLY CONDUCTED ARE STATED. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-768 415 5/9 15/5
MCDONNELL DOUGLAS ASTRONAUTICS CO-EAST ST LOUIS MO
ENGINEERING PSYCHOLOGY DEPT

PREDICTING MAINTENANCE TASK DIFFICULTY AND PERSONNEL SKILL REQUIREMENTS BASED ON DESIGN PARAMETERS OF AVIONICS SUBSYSTEMS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
AUG 73 134P LINTZ,LARRY M. ;LOY,SUSAN L. ;BROCK,GERALD R. ;POTEMPA,KENNETH W. ;

CONTRACT: F33615-71-C-1620
PROJ: AF-1124
TASK: 112402
MONITOR: AFHRL TR-72-75

UNCLASSIFIED REPORT

DESCRIPTORS: (*ELECTRONIC TECHNICIANS, *PERFORMANCE(HUMAN)), (*MAINTENANCE PERSONNEL, PERFORMANCE(HUMAN)), COMMUNICATION SYSTEMS, FLIGHT CONTROL SYSTEMS, HUMAN FACTORS ENGINEERING, MATHEMATICAL PREDICTION, MATHEMATICAL MODELS, REGRESSION ANALYSIS, TIME, COMPUTERS, DISPLAY SYSTEMS, TARGET ACQUISITION, AIRBORNE, QUESTIONNAIRES, ANALYSIS OF VARIANCE, FIRE CONTROL SYSTEMS, RADAR EQUIPMENT, INERTIAL NAVIGATION(U)
IDENTIFIERS: AVIONICS, TASK PERFORMANCE, DIFFICULTY LEVELS, RATING SCALES, *SKILL LEVELS (U)

THE RELATIONSHIPS AMONG SUBSYSTEM DESIGN CHARACTERISTICS, PERSONNEL SKILL CHARACTERISTICS, PERSONNEL SKILL CHARACTERISTICS, AND JOB PERFORMANCE WERE INVESTIGATED FOR AVIONICS SUBSYSTEMS. A LIST OF DESIGN CHARACTERISTICS WAS ESTABLISHED, AND FUNCTIONAL LOOPS AND LINE REPLACEABLE UNITS WERE SELECTED FROM TEN SUBSYSTEMS REPRESENTING NAVIGATION, FLIGHT CONTROL, COMMUNICATIONS, AND FIRE CONTROL SUBSYSTEMS. EXPERIENCED SUPERVISORS IDENTIFIED HIGH AND LOW SKILL MAINTENANCE PERSONNEL. THESE SUPERVISORS ASSOCIATED PERFORMANCE TIMES AND ERROR PROBABILITIES FOR THREE MAINTENANCE TASKS - AN EASY TASK, A DIFFICULT TASK, AND A COMPLETE FUNCTIONAL CHECKOUT TASK. SUPERVISORS ALSO RATED EACH TASK ON A SCALE OF DIFFICULTY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-770 129 9/2 5/8
NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER BETHESDA MD

MAN-MACHINE ROLE IDENTIFICATION IN SEEKING IMPROVED SOLUTIONS TO LARGE-SCALE COMPUTER SIMULATION PROBLEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
AUG 73 29P MANDELBAUM,JAY ;JORGENSEN, ERIC L. ;SMITH,DENNIS E. ;STORCK,C. EDWARD
;
REPT. NO. NSRDC-4244
PROJ: RF018-96, NR-364-059
TASK: RF018-96-01

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERIZED SIMULATION, *PROBLEM SOLVING), (*DECISION MAKING, *MAN MACHINE SYSTEMS), COMPUTER PROGRAMMING, ALGORITHMS, FORTRAN, OPTIMIZATION, MANUAL OPERATION, AUTOMATION, ANTISUBMARINE WARFARE (U)
IDENTIFIERS: OPTIMIZER COMPUTER PROGRAM (U)

THE PAPER DESCRIBES INSIGHTS, PROCEDURES, AND LIMITATIONS INVOLVED IN THE SEMI-AUTOMATIC SOLUTION OF LARGE-SCALE COMPUTER SIMULATION PROBLEMS. IT USES THE EXPERIENCE GAINED IN SOLVING TEST PROBLEMS BY BOTH A HUMAN ANALYST AND AN AUTOMATIC OPTIMIZER PROGRAM. PARTICULAR ATTENTION IS PAID TO TASKS PERFORMED BY THE MAN BUT NOT THE MACHINE AND TASKS BEST DONE BY THE MACHINE. GUIDELINES ARE SUGGESTED FOR INCORPORATING SOME OF THE HUMAN PROBLEM-SOLVING PROCESSES AS A FIRST STEP TOWARD INTERACTIVE SEMI-AUTOMATIC PROCEDURES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-775 879 5/5
PERCEPTRONICS INC WOODLAND HILLS CALIF

EXPERIMENTAL STUDY OF MAN/MACHINE INTERACTION IN ADAPTIVE COMPUTER AIDED CONTROL. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
NOV 73 60P WELTMAN,GERSHON ;STEEB, RANDALL ;FREEDY,AMOS ;SMITH,MICHAEL ;WEISBROD, RICHARD ;
REPT. NO. TR-73-10
CONTRACT: N00014-72-C-0093
PROJ: NR-196-118

UNCLASSIFIED REPORT

DESCRIPTORS: *MAN MACHINE SYSTEMS, *PROBLEM SOLVING, *ADAPTIVE CONTROL SYSTEMS, COMPUTERS, CONTROL, DECISION MAKING, COMPUTER APPLICATIONS, HUMAN FACTORS ENGINEERING (U)
IDENTIFIERS: ACS(AUTOMOMOUS CONTROL SUBSYSTEMS), AUTONOMOUS CONTROL SUBSYSTEMS (U)

THE REPORT PRESENTS THE BACKGROUND AND RESULTS OF AN EXPERIMENTAL STUDY FOCUSING ON HUMAN FACTORS ASPECTS OF ADPATIVE COMPUTER AIDING. INCLUDED ARE (1) A RATIONALE FOR SHARED DECISION AND CONTROL, (2) A DESCRIPTION OF THE ADAPTIVE AIDING COMPUTER PROGRAM AND TASK SIMULATION DEVELOPED FOR THE EXPERIMENTAL STUDY, (3) THE EXPERIMENTAL DESIGN, PROCEDURE, AND MEASUREMENT TECHNIQUES ALONG WITH A DISCUSSION OF THE RESULTS, AND (4) THE DEVELOPMENT AND TESTING OF A PROGRAM PROVIDING ON-LINE ESTIMATION OF OPERATOR UTILITIES FOR HIS OWN AND MACHINE CONTROL. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-776 235 5/9
ROWLAND AND CO HADDONFIELD N J

ANNUAL REPORT IN SUPPORT OF TECHNICAL DEVELOPMENT PLAN 43-03X - EDUCATION AND TRAINING DEVELOPMENT. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 4, 11 NOV 72-15 NOV 73, ON PHASE 2,
NOV 73 76P MARLOWE,EDWARD ;EXCOBAR, CARLOS ;ROWLAND,GEORGE E. ;
REPT. NO. R/C-73-11-113
CONTRACT: N00014-72-C-0520
PROJ: NR-154 353

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ANNUAL REPT. NO. 3, AD-754 141.

DESCRIPTORS: *PILOTS, *NAVAL TRAINING, *PERFORMANCE(HUMAN), *DATA PROCESSING, HUMAN FACTORS ENGINEERING, PERSONNEL MANAGEMENT, FEEDBACK, PROGRAMMED INSTRUCTION, STUDENTS, MANAGEMENT ENGINEERING, ADAPTIVE SYSTEMS, DECISION MAKING, COMPUTER PROGRAMMING, DATA MANAGEMENT (U)

THIS IS THE FOURTH REPORT IN A SERIES WHICH DESCRIBES THE RESULTS AND PROGRESS IN A LONG-TERM PROGRAM TO DEVELOP A DATA MANAGEMENT SYSTEM (DMS) AND A STUDENT MANAGEMENT SYSTEM (SMS) FOR USE IN THE NAVAL STUDENT PILOT TRAINING SYSTEM. THE DMS WILL CONTAIN ALL OF THE STUDENT NAVAL AVIATOR'S DATA FILES NEEDED TO SUPPORT AN IMPROVED STUDENT TRAINING SUCCESS PREDICTION CAPABILITY AND PROVIDE INFORMATION FEEDBACK SUPPORT TO BOTH OPERATIONAL AND PLANNING PERSONNEL OF CNATRA AND CNET. THE SMS IS SCHEDULED TO INCLUDE METHODS AND TECHNIQUES BY WHICH ADAPTIVE TECHNIQUES MAY BE INCLUDED TO ACHIEVE GREATER COMPUTER-AIDED STUDENT INDIVIDUALIZATION OF TRAINING. DURING THE PHASE II EFFORT, PROGRESS WAS MADE IN THE PREPARATION OF A COMPUTER SOFTWARE SUBSYSTEM SPECIFICATION OF THE DMS. IMPLEMENTATION, TEST AND EVALUATION ARE SCHEDULED FOR SUBSEQUENT PHASES. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-777 314 9/2 5/5
AIR FORCE ACADEMY COLO DEPT OF ASTRONAUTICS AND COMPUTER SCIENCE

THE ON-LINE USER-COMPUTER INTERFACE: THE EFFECTS OF INTERFACE-FLEXIBILITY EXPERIENCE, AND TERMINAL-TYPE ON USER-SATISFACTION AND PERFORMANCE. (U)

DESCRIPTIVE NOTE: DOCTORAL THESIS,
AUG 73 255P WALTHER,GEORGE H. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTERS, *ON LINE SYSTEMS, *MAN MACHINE SYSTEMS, HUMAN FACTORS ENGINEERING, PERFORMANCE(HUMAN), PROGRAMMING LANGUAGES, ATTITUDES(PSYCHOLOGY), INTERFACES (U)
IDENTIFIERS: *DESIGN CRITERIA, TEXT EDITING SYSTEMS (U)

THERE HAS BEEN A RECENT RECOGNITION BY SYSTEMS DESIGNERS OF THE NECESSITY FOR CONSIDERING THE NEEDS AND PREFERENCES OF THE USER OF ON-LINE COMPUTERS. VERY LITTLE EMPIRICAL EVIDENCE EXISTS FOR GUIDING 'USER-ORIENTED' DESIGN EFFORTS. IN THIS STUDY, TWO LEVELS OF INTERFACE FLEXIBILITY, THE USER'S PRIOR EXPERIENCE ON-LINE, AND TERMINAL TYPE WERE INVESTIGATED AS POSSIBLE DETERMINANTS OF USER SATISFACTION AND PERFORMANCE. THE TASK CONSISTED OF TEXT CORRECTION WITH AN ON-LINE TEXT EDITOR. A GENERAL LINEAR MODELS STATISTICAL TECHNIQUE CONTROLLED FOR THE EFFECTS OF MEASURABLE BUT UNCONTROLLABLE VARIABLES. INTERFACE FLEXIBILITY, OPERATIONALIZED AS ALTERNATIVES TO THE USER, IS NOT UNIFORMLY EFFECTIVE IN PRODUCING OPTIMAL PERFORMANCE FOR ALL USERS, NOR IN PRODUCING OPTIMAL PERCEPTIONS OF SATISFACTION. AN ATTEMPT WAS MADE TO SPECIFY THE KINDS OF USERS FOR WHOM FLEXIBILITY IS 'BEST.'
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-777 725 5/5 5/9
NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER ANNAPOLIS MD

CNO PILOT PROGRAM FOR REDUCED BRIDGE MANNING, MANPOWER/EQUIPMENT INTEGRATION, AND PROCEDURAL DEVELOPMENT, (U)

APR 74 92P EDMONDO,PETER M. ;HALL, CHARLES C. ;SCHWARTZ,MELVIN A. ;GULLICKSON, GREG ;
REPT. NO. NSRDC-27-742

UNCLASSIFIED REPORT

DESCRIPTORS: *TIME STUDIES, *MANPOWER, *BRIDGES, *SHIPBOARD, MODELS, NAVAL PERSONNEL, AUTOMATION, MAN MACHINE SYSTEMS, HUMAN FACTORS ENGINEERING (U)
IDENTIFIERS: DESIGN (U)

HUMAN ENGINEERING TIME/MOTION STUDIES, USING A FULL-SCALE BRIDGE MOCK-UP, WERE UNDERTAKEN TO DEVELOP AND ASSESS ALTERNATIVE MANNING, PROCEDURAL, AND EQUIPMENT CONFIGURATIONS FOR SHIP BRIDGES. ALSO THESE STUDIES WERE CONDUCTED TO DETERMINE IF STATIC MOCK-UP TIME/MOTION STUDIES COULD ASSIST SHIP BRIDGE DESIGNERS. A FULL-SCALE MOCK-UP OF A DE 1052 BRIDGE WAS EXERCISED TO DEMONSTRATE: AN IMPROVED CONFIGURATION OF BRIDGE EQUIPMENT, PROCEDURES, AND MANNING, AND THE FEASIBILITY OF OPERATING A DE 1052 CLASS ESCORT DESTROYER BRIDGE WATCH WITH THREE MEN (OFFICER OF THE DECK, QUARTERMASTER OF THE WATCH, AND HELMSMAN), AIDED BY AUGMENTED EQUIPMENT (BELL LOGGER, AUTOPILOT, AND TAPE RECORDERS) AND MODIFIED PROCEDURES. RESULTS OF THE TIME/MOTION STUDIES SHOW THAT, BY ADDING CERTAIN EQUIPMENT AUGMENTATION AND BY MODIFYING PROCEDURES, THE PERFORMANCE OF A REDUCED MANNED BRIDGE CAN BE IMPROVED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-801 362 5/5
ARMY MISSILE COMMAND REDSTONE ARSENAL ALA

METHODS AND WORK MEASUREMENT TECHNIQUES (CHAPTER 6). SECTION D - SYSTEMS ANALYSIS, (U)

66 85P PROVOST,ROBERT G. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EXTRACT FROM ARMY MISSILE COMMAND WORK MEASUREMENT HANDBOOK. ALSO INCLUDES ABSTRACT OF ITS CONTENTS.

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, MANAGEMENT PLANNING AND CONTROL), MEASUREMENT, SCHEDULING, FLOW CHARTING, MANAGEMENT PLANNING AND CONTROL, PERFORMANCE(HUMAN), DECISION MAKING, INSTRUCTION MANUALS, DATA STORAGE SYSTEMS, DATA PROCESSING, INFORMATION RETRIEVAL (U)

CONTENTS: SYSTEMS ANALYSIS; SYSTEMS ANALYSIS PROCEDURES TRAINING GUIDE; AND TOP MANAGEMENT CHART (TOMAC) CHARTING INSTRUCTIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-816 523 5/10 17/1
APPLIED PSYCHOLOGICAL SERVICES WAYNE PA SCIENCE CENTER

VERIFICATION OF A DIGITAL TECHNIQUE FOR SONAR OPERATION SIMULATION, (U)

MAY 67 25P MACPHERSON,DOUGLAS H. ; SIEGEL,ARTHUR I. ;
CONTRACT: N00014-66-C-0184

UNCLASSIFIED REPORT

DESCRIPTORS: (*SONAR PERSONNEL, *MOTOR REACTIONS), (*MAN MACHINE SYSTEMS, SIMULATION), (*SONAR EQUIPMENT, SIMULATION), DIGITAL SYSTEMS, PERFORMANCE(HUMAN), STRESS(PHYSIOLOGY), COMPUTERS, HUMAN FACTORS ENGINEERING, ACOUSTIC DETECTORS, TARGET RECOGNITION (U)
IDENTIFIERS: AN/SQS-4 (U)

A PREVIOUSLY DEVELOPED COMPUTER BASED, DIGITAL SIMULATION TECHNIQUE WAS APPLIED TO A SONAR SITUATION IN ORDER TO VERIFY THE APPLICABILITY OF THE TECHNIQUE FOR SIMULATING SONAR DETECTION AND TRACK TASKS. NO STATISTICALLY SIGNIFICANT DIFFERENCES WERE NOTED BETWEEN TASK SUCCESS PREDICTIONS OF THE MODEL AND CRITERION DATA BASED ON THE PERFORMANCE OF SONAR TECHNICIANS. IN A SECOND STUDY ASPECT, THE TIME FOR SONAR TECHNICIANS, AT TWO SKILL LEVELS, TO PERFORM THE MOTOR ACTS INVOLVED IN SONAR APPARATUS OPERATION AND THEIR TIME TO DETECT A TARGET WAS INVESTIGATED. THE MOTOR PERFORMANCE OF LESS SKILLED (JOURNEYMAN) OPERATORS WAS ABOUT 20% SLOWER AND 20% MORE VARIABLE THAN THAT OF THE MORE SKILLED TECHNICIANS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-823 798 17/1 9/2 5/9
GENERAL DYNAMICS CORP GROTON CONN ELECTRIC BOAT DIV

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

DESCRIPTIVE NOTE: PROGRESS REPT. NO. 2, APR 66-JUL 67,
JUL 67 136P GLORIOSO,ROBERT M. ;
REPT. NO. U417-67-030
CONTRACT: NONR-2512(00)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH CONNECTICUT UNIV., STORRS. SEE ALSO VOLUME I DATED AUG 66, AD-803 277.

DESCRIPTORS: (*DATA PROCESSING, *SONAR RECEIVERS), (*DIGITAL COMPUTERS, *SONAR PERSONNEL), OPERATORS(PERSONNEL), SIGNAL-TO-NOISE RATIO, STOCHASTIC PROCESSES, FEEDBACK, PERFORMANCE(HUMAN), UNDERWATER OBJECT LOCATORS, SONAR SIGNALS, DISCRIMINATORS, MEMORY(PSYCHOLOGY), RETENTION(PSYCHOLOGY), VISION, THRESHOLDS(PHYSIOLOGY), ADAPTATION(PHYSIOLOGY), LEARNING, ARTIFICIAL INTELLIGENCE, PATTERN RECOGNITION, MAN MACHINE SYSTEMS, BIBLIOGRAPHIES, HUMAN FACTORS ENGINEERING (U)
IDENTIFIERS: *SUBIC (U)

THE AIM OF THIS PROJECT IS TO PROVIDE BASIC KNOWLEDGE CONCERNING 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 TWO REPORTS IN THIS VOLUME ARE CONCERNED WITH THE BEHAVIOR OF SYSTEMS UNDER CHANGING OR DYNAMIC CONDITIONS. THE FIRST REPORT IS AN INTRODUCTION AND BIBLIOGRAPHY (THROUGH SPRING 1967) COVERING THE AREAS OF ARTIFICIAL INTELLIGENCE, ADAPTATION, LEARNING, AND PATTERN RECOGNITION. IN ADDITION, THE DEFINITIONS OF 'ADAPTATION' AND 'LEARNING' ARE DISCUSSED. THE SECOND REPORT IS AN EXTENSIVE ANALYTICAL AND EXPERIMENTAL STUDY OF THE OPERATOR'S BEHAVIOR IN A DYNAMIC DETECTION TASK. THE EFFECTS OF CHANGES IN SIGNAL TO NOISE AND FEEDBACK STATE WERE INVESTIGATED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-823 846 17/1 9/2 5/9
GENERAL DYNAMICS CORP GROTON CONN ELECTRIC BOAT DIV

EXPERIMENTAL INVESTIGATIONS OF MAN-MACHINE PROCESSING OF INFORMATION. VOLUME II. (U)

DESCRIPTIVE NOTE: PROGRESS REPT. JUL 66-JUL 67,
JUL 67 252P BOOTH,TAYLOR L. ;GLORIOSO, ROBERT M. ;KAUFMAN,HERBERT M. ;LAMB,JERRY C. ;LEVY,ROBERT M. ;
REPT. NO. U417-67-031
CONTRACT: NONR-2512(00)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH CONNECTICUT UNIV. STORRS. SEE ALSO VOLUME I, AD-653 278.

DESCRIPTORS: (•DATA PROCESSING, •MAN MACHINE SYSTEMS), (•SONAR PERSONNEL, •SONAR RECEIVERS), REPORTS, SONAR TARGETS, IDENTIFICATION SYSTEMS, SONAR EQUIPMENT, SONAR SIGNALS, OPERATORS(PERSONNEL), PASSIVE SYSTEMS, DETECTION, DISPLAY SYSTEMS, PATTERN RECOGNITION, VISUAL ACUITY, DECISION MAKING, CODING, PERFORMANCE(HUMAN), HUMAN FACTORS ENGINEERING, SIGNAL-TO-NOISE RATIO, BACKGROUND, NOISE, FLOW CHARTING, SUBROUTINES (U)
IDENTIFIERS: LIGHT PENS, ON-LINE SYSTEMS, •SUBIC (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 FIRST REPORT IS A DESCRIPTION OF THE OVERALL RESEARCH CAPABILITY OF THE DISPLAY FACILITY AT THE UNIVERSITY OF CONNECTICUT FACILITY. THE NEXT TWO REPORTS DESCRIBE EXPERIMENTAL INVESTIGATIONS USING A SIMULATED SONAR SEARCH TASK. THE RESULTS OF THE OPERATOR'S ABILITY TO DETECT CURVED TARGETS AND TO USE COMPUTER AIDS UNDER LIGHT-PEN CONTROL ARE DESCRIBED IN ONE WHILE THE EFFECTS OF TRANSFORMING THE DOTS TO VERTICAL LINE SEGMENTS ARE DISCUSSED IN THE OTHER. THE NEXT THREE REPORTS DESCRIBE A SERIES OF EXPERIMENTS ON BASIC HUMAN INFORMATION PROCESSING CHARACTERISTICS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-831 288 5/5 5/10
ARMY BEHAVIORAL SCIENCE RESEARCH LAB WASHINGTON D C

RELATION OF CERTITUDE JUDGEMENTS TO CHARACTERISTICS OF UPDATED SYMBOLIC INFORMATION. (U)

DESCRIPTIVE NOTE: TECHNICAL RESEARCH NOTE,
APR 68 28P ANDREWS,ROBERT S. ;VICINO, FRANK L. ;RINGEL,SEYMOUR ;
REPT. NO. BESRL-TRN-194
PROJ: DA-2J024701A723

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMMAND AND CONTROL SYSTEMS, DISPLAY SYSTEMS), (*DECISION MAKING, PERFORMANCE(HUMAN)), SYMBOLS, UNCERTAINTY, ACCURACY, AUTOMATION, PERCEPTION(PSYCHOLOGY), DATA PROCESSING, DATA STORAGE SYSTEMS, REASONING, INFORMATION RETRIEVAL, CODING, ANALYSIS OF VARIANCE, HUMAN FACTORS ENGINEERING (U)

A SERIES OF STUDIES WAS CONDUCTED BY THE COMMAND SYSTEMS TASK IN WHICH A VARIETY OF DISPLAY VARIABLES ARE SYSTEMATICALLY INVESTIGATED IN TERMS OF THEIR EFFECTS ON INFORMATION ASSIMILATION AND DECISION MAKING IN A COMMAND AND CONTROL SETTING. THE PRESENT STUDY EXPLORES THE EFFECTS OF TYPE AND NUMBER OF UPDATING CHANGE, AMOUNT OF INFORMATION PRESENTED, AND SELECTED ENHANCEMENT TECHNIQUES ON CONFIDENCE AND ON THE RELATIONSHIP OF CONFIDENCE TO ACCURACY OF INFORMATION ASSIMILATION. FINDINGS INDICATE: (1) THE MORE EFFECTIVE THE ENHANCEMENT TECHNIQUE, THE HIGHER THE CERTITUDE-ACCURACY RELATIONSHIP. WITH THE BEST ENHANCEMENT TECHNIQUE (DOUBLE-CUE CODING), 64 PERCENT OF THE CERTITUDE VARIANCE COULD BE ACCOUNTED FOR BY ACCURACY VARIANCE; WITH THE POOREST (HARD COPY), ONLY 20 PERCENT. (2) BOTH OVER-CERTITUDE AND UNDER-CERTITUDE WAS EVIDENCED, WITH OVER-CERTITUDE TENDING TO INCREASE WITH THE LESS EFFECTIVE ENHANCEMENT TECHNIQUES. (3) INCREASE IN EITHER AMOUNT OF INFORMATION PRESENTED OR AMOUNT OF UPDATING RESULTED IN DECLINE IN BOTH MEAN ACCURACY AND MEAN CERTITUDE, THE RATE VARYING WIDELY OVER THE DIFFERENT ENHANCEMENT TECHNIQUES AND OVER TYPES OF UPDATE. (4) ALTHOUGH EFFECTS OF THE MAIN VARIABLES ON ACCURACY AND CERTITUDE WERE HIGHLY SIMILAR, THE CORRESPONDENCE DID NOT HOLD FOR INDIVIDUAL PERFORMANCE SCORES. FINDINGS SUGGEST NEED TO IMPROVE AGREEMENT BETWEEN A MAN'S PERFORMANCE IN INFORMATION ASSIMILATION AND HIS JUDGMENT OF THAT PERFORMANCE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-835 025 5/5 5/3
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)

HUMAN FACTORS RESEARCH IN THE BRITISH IRON AND STEEL RESEARCH ASSOCIATION. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 68 9P SINAIKO,H. WALLACE ;
REPT. NO. ONRL-38-68

UNCLASSIFIED REPORT

DESCRIPTORS: (*HUMAN FACTORS ENGINEERING, GREAT BRITAIN), (*IRON INDUSTRY, SCIENTIFIC RESEARCH), VISUAL INSPECTION, DESIGN, STEEL INDUSTRY, PROTECTIVE CLOTHING, CONTROL, MANAGEMENT ENGINEERING, DECISION MAKING, MONITORS, COMPUTERS, INTERACTIONS, MAN MACHINE SYSTEMS, EFFECTIVENESS (U)

THE REPORT SUMMARIZES ANALYTIC, EXPERIMENTAL, AND CONSULTING WORK OF THE HUMAN FACTORS GROUP AT THE BRITISH IRON AND STEEL RESEARCH ASSOCIATION. EXAMPLES OF RECENTLY COMPLETED STUDIES, AS WELL AS CURRENT WORK, IN PROBLEMS OF VISUAL INSPECTION, CONTROL ROOM DESIGN FOR CONTINUOUS PROCESS MONITORING FUNCTIONS, AND THE MEASUREMENT OF MENTAL EFFORT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-836 650 17/7 17/9 1/2 15/7
BELL AEROSYSTEMS CO BUFFALO N Y

TACTICAL INSTRUMENT LANDING (TACLAND) SYSTEM STUDY. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUL 67-29 FEB 68,
APR 68 445P SULLIVAN,NEIL ;TAYLOR,JAMES K. ;
REPT. NO. BA-6145-950001
CONTRACT: F33615-67-C-1908
PROJ: AF-682C
MONITOR: AFFDL TR-68-22

UNCLASSIFIED REPORT

DESCRIPTORS: (•AIRCRAFT LANDINGS, •INSTRUMENT FLIGHT), (•AIR TRAFFIC CONTROL SYSTEMS, STATE-OF-THE-AR REVIEWS), RADIO NAVIGATION, AIRMOBILE OPERATIONS, TACTICAL AIR SUPPORT, CLOSE SUPPORT, ALL WEATHER AVIATION, CARGO, CARGO PARACHUTES, LOGISTICS, LANDING AIDS, GLIDE PATH SYSTEMS, GROUND-CONTROLLED APPROACH RADAR, BEACONS, RELIABILITY, HUMAN FACTORS ENGINEERING, MAINTAINABILITY, TAKEOFF, ANTENNAS, DATA PROCESSING, PLANNING (U)
IDENTIFIERS: EXTRACTION PARACHUTES, •TACLAND(TACTICAL INSTRUMENT LANDING), •TACTICAL INSTRUMENT LANDINGS (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-842 708 5/5 5/2 5/10
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)

THE FIELD UNIT AS AN INTERFACE BETWEEN PSYCHOLOGICAL RESEARCH AND HUMAN FACTORS APPLICATIONS. (U)

OCT 68 20P ZEIDNER,JOSEPH ;BAKER,JAMES D. ;

REPT. NO. ONRL-75-68

UNCLASSIFIED REPORT

DESCRIPTORS: (*INFORMATION RETRIEVAL, HUMAN FACTORS ENGINEERING), (*NAVAL INTELLIGENCE, COMMAND AND CONTROL SYSTEMS), DATA PROCESSING, DECISION MAKING, PSYCHOLOGICAL TESTS, OPERATIONS RESEARCH, BEHAVIOR, INTERFACES (U)

THIS REPORT REVIEWS THE HUMAN FACTORS RESEARCH BEING CONDUCTED TO SUPPORT, ON THE SPOT, A FIELD DEVELOPMENT OF A COMMAND INFORMATION PROCESSING SYSTEM. STUDIES DESCRIBED ARE THE AREA OF DECISION-MAKING, THE USE OF CERTITUDE JUDGMENT, DISPLAYS, AND USER-ORIENTED INFORMATION REQUIREMENTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-844 910 13/8
BENDIX CORP SOUTHFIELD MICH BENDIX RESEARCH LABS

PERFORMANCE MEASUREMENT TECHNIQUES FOR ADAPTIVE PROCESS CONTROL. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 SEP 66-30 APR 68, SEP 68 182P VALEK,ROBERT J. ;RUSSO, FRANK A. ;
REPT. NO. BRL-4468
CONTRACT: AF 33(615)-2634
PROJ: AF-8-323
MONITOR: AFML TR-68-265

UNCLASSIFIED REPORT

DESCRIPTORS: (*PRODUCTION CONTROL, *ADAPTIVE CONTROL SYSTEMS), LATHES, ELECTRON BEAM WELDING, GRINDING, PATTERN RECOGNITION, DIGITAL COMPUTERS, DATA PROCESSING, LOGIC CIRCUITS, TRAINING, COSTS, MANUFACTURING, HUMAN FACTORS ENGINEERING, AUTOMATION (U)

IN ADAPTIVE PROCESS CONTROL SYSTEMS, AN ESSENTIAL REQUIREMENT IS THE AVAILABILITY OF ON-LINE FEEDBACK DATA INDICATIVE OF THE ACTUAL PROCESS PERFORMANCE. THE MEASUREMENT OF SUCH DATA OFTEN POSES DIFFICULT DESIGN PROBLEMS BECAUSE AVAILABLE SENSORS ARE CAPABLE OF MEASURING ONLY CERTAIN PROCESS VARIABLES WHICH ARE RELATED TO TRUE PERFORMANCE BY COMPLEX FUNCTIONS. DETERMINATION OF THESE FUNCTIONS REQUIRES EXTENSIVE COLLECTION AND ANALYSIS OF EXPERIMENTAL DATA FOR ALL TYPES OF PROCESS CONDITIONS. THIS REPORT DESCRIBES A PROJECT CONDUCTED TO SYSTEMATIZE AND SIMPLIFY THE PERFORMANCE AND MEASUREMENT PROBLEM. THE APPROACH TO THIS OBJECTIVE WAS BASED ON THE USE OF A DIGITAL COMPUTER TO IMPLEMENT A TRAINABLE PATTERN RECOGNITION DATA PROCESSING TECHNIQUE. THE APPROACH WAS DEMONSTRATED BY DESIGNING AND FABRICATING A PROTOTYPE PERFORMANCE MEASUREMENT SYSTEM AND BY EVALUATING THE SYSTEM OPERATING IN CONJUNCTION WITH THREE DIVERSE MANUFACTURING PROCESSES: A TURNING PROCESS (LATHE), AN ELECTRON-BEAM WELDING PROCESS, AND A GRINDING PROCESS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-856 929 5/9 5/5 14/5
NAVAL TRAINING DEVICE CENTER ORLANDO FLA

VISUAL SIMULATION AND IMAGE INTERPRETATION. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 69 93P BLISS,WILLIAM D. ;
REPT. NO. NAVTRADEVCEN-IH-153
PROJ: NAVTRADEVCEN-7885-21

UNCLASSIFIED REPORT

DESCRIPTORS: (*TARGET RECOGNITION, DISPLAY SYSTEMS), (*DISPLAY SYSTEMS, TRAINING DEVICES), (*SURFACE TARGETS, TARGET ACQUISITION), VISUAL PERCEPTION, PHOTOGRAPHIC IMAGES, CLOSED CIRCUIT TELEVISION, MOTION PICTURES, TRAINING FILMS, TERRAIN, MODELS(SIMULATIONS), ILLUMINATION, COMPUTERS, COLORS, BIBLIOGRAPHIES, REVIEWS, AERIAL RECONNAISSANCE, PERFORMANCE(HUMAN), RESOLUTION, PHOTOINTERPRETATION, IMAGES (U)
IDENTIFIERS: HUMAN FACTORS ENGINEERING, PHOTOMOSAICS, SIMULATION, VISION (U)

THIS REPORT SUMMARIZES THE AVAILABLE DATA ON PARAMETERS AFFECTING TARGET RECOGNITION IN DYNAMIC IMAGE FORMING SYSTEMS. THE VARIOUS ALTERNATIVE WAYS IN WHICH VISUAL SYSTEMS CAN BE SIMULATED AND THE RELATIVE MERITS OF EACH APPROACH ARE DISCUSSED. SEVENTY-ONE RESEARCH REPORTS WHICH PURPORT TO RELATE TO THE EFFECT UPON OPERATOR PERFORMANCE OF VARIATIONS IN THE PARAMETERS OF IMAGE FORMING SYSTEMS ARE ANALYZED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-859 300 5/10 5/9 5/2
AIR FORCE HUMAN RESOURCES LAB WRIGHT-PATTERSON AFB OHIO

REVIEW AND ANALYSIS OF PERSONNEL SUBSYSTEM TEST AND EVALUATION LITERATURE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. OCT 66-AUG 67, JAN 69 390P ASKREN,WILLIAM B. ;NEWTON, RICHARD R. ;
PROJ: AF-1710
TASK: 71006
MONITOR: AFHRL TR-68-7

UNCLASSIFIED REPORT

DESCRIPTORS: (*PERFORMANCE(HUMAN), *MILITARY REQUIREMENTS), (*TEST CONSTRUCTION(PSYCHOLOGY), *REVIEWS), PERFORMANCE(HUMAN), MAN MACHINE SYSTEMS, SAFETY, MAINTENANCE, DATA PROCESSING, PROBLEM SOLVING, HUMAN FACTORS ENGINEERING, JOB ANALYSIS, TRAINING, PERSONNEL MANAGEMENT, SYSTEMS ENGINEERING, ABSTRACTS (U)

THE REPORT REVIEWS AND ANALYZES 95 DOCUMENTS RELATED TO PERSONNEL SUBSYSTEM TEST AND EVALUATION. THE REPORTS ARE DIVIDED INTO TWO GROUPS: (1) SYSTEM TESTS AND (2) RELATED RESEARCH MATERIAL. EACH REPORT IS ABSTRACTED AND THEN ANALYZED FURTHER IN TERMS OF 11 CATEGORIES: SCOPE AND RELATION TO PERSONNEL SUBSYSTEM ELEMENTS; TEST OBJECTIVES; DATA REQUIREMENTS AND TEST CRITERIA; DATA COLLECTION METHODOLOGY; SUPPORT REQUIREMENTS; REDUCING AND ANALYZING DATA; SIGNIFICANT TEST RESULTS; COMMUNICATING AND USING TEST RESULTS; FACTORS IN PLANNING A TEST PROGRAM; FACTORS IN CONDUCTING A TEST PROGRAM; AND OTHER PROBLEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-865 233 15/5 1/3
BOEING CO SEATTLE WASH

GENERAL OPERATIONAL AIRCRAFT LOGISTICS SIMULATION (GOALS). VOLUME I, DESCRIPTION AND RESULTS, (U)

DEC 69 113P KEENEY ,J. H. ;
REPT. NO. D162-10155-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR FORCE LOGISTICS COMMAND, INTEGRATED SYSTEMS), MISSION PROFILES, MODELS(SIMULATIONS), HUMAN FACTORS ENGINEERING, CLOSE SUPPORT, MAINTENANCE, STRATEGIC AIR COMMAND, COMPUTER PROGRAMS, DATA PROCESSING, DATA STORAGE SYSTEMS, JET BOMBERS, SCHEDULING, AIR FORCE EQUIPMENT, STRATEGIC MATERIALS, SUPPLY DEPOTS, MANPOWER, MANAGEMENT ENGINEERING, AIR FORCE OPERATIONS, MODELS(SIMULATIONS), OPERATIONAL READINESS, COST EFFECTIVENESS, LIFE EXPECTANCY, SPARE PARTS (U)
IDENTIFIERS: B-52 AIRCRAFT, B-52G AIRCRAFT, GENERAL OPERATIONAL AIRCRAFT LOGISTICS SIMULATION, GOALS(GENERAL OPERATIONAL AIRCRAFT LOGISTICS SIMULAT, ILS(INTEGRATED LOGISTIC SUPPORT), LOGISTICS SUPPORT (U)

THIS DOCUMENT DESCRIBES THE GENERAL OPERATIONAL AIRCRAFT LOGISTICS SIMULATION (GOALS) MODEL AND RESULTS ACHIEVED TO DATE. THE MODEL WAS DEVELOPED TO SIMULATE A PEACETIME MILITARY AIRCRAFT OPERATION, INCLUDING LOGISTICS ELEMENTS. THE MODEL IS CAPABLE OF RECEIVING DETAILED LOGISTICS DATA (SPARES, EQUIPMENT, FACILITIES, PERSONNEL, MAINTENANCE TASKS, MAINTENANCE TIMES, RELIABILITY FACTORS, AND MAINTAINABILITY CRITERIA) AND UTILIZES THESE FACTORS AS REQUIRED TO SUPPORT A SPECIFIED OPERATIONAL NEED. OPERATIONAL VARIATIONS CAN BE APPLIED TO DETERMINE IMPACT ON LOGISTICS AND SUPPORT COSTS. CONVERSELY, LOGISTICS AVAILABILITY CAN BE ADJUSTED TO MEASURE THE INFLUENCE ON OPERATIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZHK13

AD-900 567 5/8 5/9 17/2 17/4
AUTONETICS ANAHEIM CALIF

EFFECTS OF SIGNAL DENSITY, UPDATE RATE, AND COLOR CODING UPON HUMAN INFORMATION PROCESSING, (U)

OCT 71 12P WYMAN,M. J. ;GREENING,C. P. ;STURM,R. D. ;
REPT. NO. X71-632/401
MONITOR: GIDEP 347.00.00.00.C1.50

UNCLASSIFIED REPORT

DESCRIPTORS: (*DISPLAY SYSTEMS, MAN MACHINE SYSTEMS), DATA TRANSMISSION SYSTEMS, VISUAL SIGNALS, REAL TIME, PERFORMANCE(HUMAN), MONITORS, DECISION MAKING, COLOR VISION, RESPONSE(BIOLOGY), SCREENS(DISPLAYS), COMMAND AND CONTROL SYSTEMS, MULTIPLE OPERATION, ERRORS, DETECTION, REACTION(PSYCHOLOGY), REFLEXES, COLORS, CODING, OPERATORS(PERSONNEL), EXPERIMENTAL DESIGN, DATA PROCESSING, THREAT EVALUATION, PROBABILITY, SIMULATION, ELECTRONIC COUNTERMEASURES, COMPUTER PROGRAMMING, STATISTICAL ANALYSIS (U)
IDENTIFIERS: COLOR CODING, DESIGN CRITERIA, SCENARIOS, SIGNAL DENSITY (U)

A RESEARCH PROGRAM WAS UNDERTAKEN TO DETERMINE OPERATOR INFORMATION PROCESSING CAPABILITIES FOR THE TYPE OF DISPLAY WHICH IS TYPICAL OF COMPUTER-CONTROLLED SYSTEMS. THESE DISPLAYS REQUIRE REAL-TIME SURVEILLANCE BY THE OPERATOR SO THAT, IF NECESSARY, HE MAY OVERRIDE THE COMPUTER AT ANY POINT IN TIME. THIS PROCESS HAS BEEN REFERRED TO AS ACTIVE MONITORING. THE HUMAN MONITOR MUST MAINTAIN AWARENESS OF THE DISPLAYED EVENTS AND COMPUTER ACTIONS, IN ORDER TO INTERACT WITH THE COMPUTER IN A REAL-TIME FASHION. ONE EXAMPLE OF THIS TYPE OF SYSTEM WOULD BE AN AIRBORNE COMPUTER-CONTROLLED ELECTRONIC COUNTERMEASURES DISPLAY. A PART-TASK SIMULATOR FOR THIS TYPE OF DISPLAY SYSTEM WAS DEVELOPED, AND A STUDY WAS DESIGNED TO TEST ACTIVE MONITORING PERFORMANCE. (U)

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