

JOINT SERVICES ELECTRONICS PROGRAM
REPORTS DISTRIBUTION LIST

Department of Defense

Assistant Director (Research)
Office of Director of Defense Research
& Engineering
Pentagon, Rm 3C128
Washington, D. C. 20301

Technical Library
DDR&E
Room 3C-122, The Pentagon
Washington, D.C. 20301

Director For Materials Sciences
Advanced Research Projects Agency
Room 3D179, Pentagon
Washington, D.C. 20301

Chief, R&D Division (340)
Defense Communications Agency
Washington, D.C. 20305

Defense Documentation Center
Attn: DDC-TCA
Cameron Station
Alexandria, Virginia 22314

Dr. Alvin D. Schnitzler
Institute For Defense Analyses
Science and Technology Division
400 Army-Navy Drive
Arlington, Virginia 22202

LTC Norman D. Jorstad
Weapons Systems Evaluation Group
400 Army-Navy Drive
Arlington, Virginia 22202

Central Intelligence Agency
Attn: CRS/ADD/PUBLICATIONS
Washington, D.C. 20505

M. A. Rothenberg (STEPD-SC(S))
Scientific Director
Deseret Test Center
Bldg 100, Soldiers' Circle
Fort Douglas, Utah 84113

Department of the Air Force

Hq USAF (AFRDDD)
The Pentagon
Washington, D.C. 20330

Hq USAF (AFRDDG)
The Pentagon
Washington, D.C. 20330

Hq USAF (AFRDSD)
The Pentagon
Washington, D.C. 20330
Attn: LTC C. M. Waespy

Colonel E. P. Gaines, Jr.
ESD (MCD)
L. G. Hanscom Field
Bedford, Massachusetts 01730

Dr L. A. Wood, Director
Electronic and Solid State Sciences
Air Force Office of Scientific Research
1400 Wilson Boulevard
Arlington, Virginia 22209

Dr Harvey E. Savely, Director
Life Sciences
Air Force Office of Scientific Research
1400 Wilson Boulevard
Arlington, Virginia 22209

Mr I. R. Mirman
Hq AFSC (SGGP)
Andrews Air Force Base,
Washington, D.C. 20331

Rome Air Development Center
Attn: Documents Library (EMTLD)
Griffiss Air Force Base, New York 13440

Mr H. E. Webb, Jr (EMBIS)
Rome Air Development Center
Griffiss Air Force Base, New York 13440

Dr L. M. Hollingsworth
AFCRL (CRN)
L. G. Hanscom Field
Bedford, Massachusetts 01730

Hq ESD (ESTI)
L. G. Hanscom Field
Bedford, Massachusetts 01730

Professor R. E. Fontana, Head
Dept of Electrical Engineering
Air Force Institute of Technology
Wright-Patterson Air Force Base,
Ohio 45433

AFAL (AVT) Dr H. V. Noble, Chief
Electronics Technology Division
Air Force Avionics Laboratory
Wright-Patterson Air Force Base,
Ohio 45433

JOINT SERVICES REPORTS DISTRIBUTION LIST (continued)

Director
Air Force Avionics Laboratory
Wright-Patterson Air Force Base,
Ohio 45433

AFAL (AVTA/R. D. Larson)
Wright-Patterson Air Force Base,
Ohio 45433

Director of Faculty Research
Department of the Air Force
U.S. Air Force Academy
Colorado 80840

Mr Jules I. Wittebort
Chief, Electronics Branch
Manufacturing Technology Division
AFAL/LTE
Wright-Patterson Air Force Base,
Ohio 45433

Academy Library (DFSLEB)
USAF Academy, Colorado 80840

Director of Aerospace Mechanics Sciences
Frank J. Seiler Research Laboratory (OAR)
USAF Academy, Colorado 80840

Major Richard J. Gowen
Tenure Associate Professor
Dept of Electrical Engineering
USAF Academy, Colorado 80840

Director, USAF PROJECT RAND
Via: Air Force Liaison Office
The RAND Corporation
Attn: Library D
1700 Main Street
Santa Monica, California 90406
Hq SAMSO (SMTAE/Lt Belate)
Air Force Unit Post Office
Los Angeles, California 90045
AUL3T-9663
Maxwell Air Force Base, Alabama 36112

AFETR Technical Library
(ETV, MU-135)
Patrick Air Force Base, Florida 32925

ADTC (ADBPS-12)
Eglin Air Force Base, Florida 32542

Mr B. R. Locke
Technical Adviser, Requirements
USAF Security Service
Kelly Air Force Base, Texas 78241

Hq AMD (AMR)
Brooks Air Force Base, Texas 78235

USAFSAM (SMKOR)
Brooks Air Force Base, Texas 78235

Commanding General
Attn: STEWS-RE-L, Technical Library
White Sands Missile Range,
New Mexico 88002

Hq AEDC (AETS)
Arnold Air Force Station, Tennessee 37389

European Office of Aerospace Research
Technical Information Office
Box 14, FPO New York 09510

Electromagnetic Compatibility Analysis
Center (ECAC) ATTN: ACOAT
North Severn
Annapolis, Maryland 21402

VELA Seismological Center
312 Montgomery Street
Alexandria, Virginia 22314

Capt C. E. Baum
AFWL (WLRE)
Kirtland Air Force Base, New Mexico 87117

Dr Billy Welch
USAFSAM (SMC)
Brooks Air Force Base, Texas 78235

Department of the Army

Director
Physical & Engineering Sciences Division
3045 Columbia Pike
Arlington, Virginia 22204

Commanding General
U. S. Army Security Agency
Attn: IARD-T
Arlington Hall Station
Arlington, Virginia 22212

Commanding General
U. S. Army Materiel Command
Attn: AMCRD-TP
Washington, D. C. 20315

Director
U. S. Army Advanced Materiel
Concepts Agency
2461 Eisenhower Avenue
Alexandria, Virginia 22314

Commanding General
USACDC Institute of Land Combat
Attn: Technical Library, Rm 636
2461 Eisenhower Avenue
Alexandria, Virginia 22314

Mr H. T. Darracott (AMXAM-FT)
U. S. Army Advanced Materiel Concepts Agency
2461 Eisenhower Avenue
Alexandria, Virginia 22314

JOINT SERVICES REPORTS DISTRIBUTION LIST (continued)

Commanding Officer
Harry Diamond Laboratories
Attn: Dr Berthold Altman (AMXDO-TI)
Connecticut Avenue and
Van Ness Street N. W.
Washington, D. C. 20438

Commanding Officer (AMXRO-BAT)
U. S. Army Ballistic Research Laboratory
Aberdeen Proving Ground
Aberdeen, Maryland 21005

Technical Director
U. S. Army Land Warfare Laboratory
Aberdeen Proving Ground
Aberdeen, Maryland 21005

U. S. Army Munitions Command
Attn: Science & Technology Information
Branch, Bldg 59
Picatinny Arsenal, SMUPA-RT-S
Dover, New Jersey 07801

U. S. Army Mobility Equipment Research
and Development Center
Attn: Technical Documents Center, Bldg 315
Fort Belvoir, Virginia 22060

Commanding Officer
U. S. Army Engineer Topographic
Laboratories
Attn: STINFO Center
Fort Belvoir, Virginia 22060

Dr Herman Robl
Deputy Chief Scientist
U. S. Army Research Office (Durham)
Box CM, Duke Station
Durham, North Carolina 27706

Richard O. Ulsh (CRDARD-IP)
U. S. Army Research Office (Durham)
Box CM, Duke Station
Durham, North Carolina 27706

Technical Director (SMUFA-A2000-107-1)
Frankford Arsenal
Philadelphia, Pennsylvania 19137

Redstone Scientific Information Center
Attn: Chief, Document Section
U. S. Army Missile Command
Redstone Arsenal, Alabama 35809

Commanding General
U. S. Army Missile Command
Attn: AMSMI-RR
Redstone Arsenal, Alabama 35809

Commanding General
U. S. Army Strategic Communications
Command
Attn: SCC-ATS (Mr Peter B. Pichetto)
Fort Huachuca, Arizona 85613

Commanding Officer
Army Materials and Mechanics
Research Center
Attn: Dr H. Priest
Watertown Arsenal
Watertown, Massachusetts 02172

Commandant
U. S. Army Air Defense School
Attn: Missile Science Division, C&S Dept
P. O. Box 9390
Fort Bliss, Texas 79916

Commandant
U. S. Army Command and General
Staff College
Attn: Acquisitions, Lib Div
Fort Leavenworth, Kansas 66027

Dr H. K. Ziegler, Chief Scientist
Army Member TAC/JSEP (AMSEL-SC)
U. S. Army Electronics Command
Fort Monmouth, New Jersey 07703

Mr I. A. Balton, AMSEL-XL-D
Executive Secretary, TAC/JSEP
U. S. Army Electronics Command
Fort Monmouth, New Jersey 07703

Director (NV-D)
Night Vision Laboratory, USAECOM
Fort Belvoir, Virginia 22060

Commanding Officer
Atmospheric Sciences Laboratory
U. S. Army Electronics Command
White Sands Missile Range,
New Mexico 88002

Commanding Officer (AMSEL-BL-WS-R)
Atmospheric Sciences Laboratory
U. S. Army Electronics Command
White Sands Missile Range,
New Mexico 88002

Chief
Missile Electronic Warfare Tech
Area (AMSEL-WL-M)
Electronic Warfare Laboratory, USAECOM
White Sands Missile Range,
New Mexico 88002

JOINT SERVICES REPORTS DISTRIBUTION LIST (continued)

Product Manager NAVCON
Attn: AMCPM-NS-TM, Bldg 439
(H. H. Bahr)
Fort Monmouth, New Jersey 07703

Mr A. D. Bedrosian, Rm 26-131
U.S. Army Scientific Liaison Office
Massachusetts Institute of Technology
77 Massachusetts Avenue
Cambridge, Massachusetts 02139

Commanding General
U.S. Army Electronics Command
Fort Monmouth, New Jersey 07703
Attn: AMSEL-SC

DL
GG-DD
XL-D
XL-DT
XL-G (Dr S. Kronenberg)
XL-H (Dr R. G. Buser)
BL-FM-P
CT-D
CT-R
CT-S
CT-L (Dr W. S. McAfee)
CT-O
CT-I
CT-A
NL-D (Dr H. Bennett)
NL-A
NL-C
NL-P
NL-P-2
NL-R
NL-S
KL-D
KL-I
KL-E
KL-S
KL-SM
KL-T
VL-D
VL-F
WL-D
RD-PB (Miss F. Morris)

Department of the Navy

Director, Electronics Programs
Attn: Code 427
Office of Naval Research
800 North Quincy Street
Arlington, Virginia 22217

Mr Gordon D. Goldstein, Code 437
Information Systems Program
Office of Naval Research
800 North Quincy Street
Arlington, Virginia 22217

Commander
Naval Security Group Command
Naval Security Group Headquarters
Attn: Technical Library (G43)
3801 Nebraska Avenue, N. W.
Washington, D.C. 20390

Director
Naval Research Laboratory
Washington, D.C. 20390
Attn: Code 2027
Dr W. C. Hall, Code 7000
Mr A. Brodzinsky, Supt,
Electronics Div

Code 8050
Maury Center Library
Naval Research Laboratory
Washington, D.C. 20390

Dr G. M. R. Winkler
Director, Time Service Division
U.S. Naval Observatory
Washington, D.C. 20390

Naval Air Systems Command
AIR 03
Washington, D.C. 20360

Naval Ship Systems Command
Ship 031
Washington, D.C. 20360

Naval Ship Systems Command
Ship 035
Washington, D.C. 20360

U.S. Naval Weapons Laboratory
Dahlgren, Virginia 22448

Naval Electronic Systems Command
ELEX 03, Rm 2534 Main Navy Bldg
Department of the Navy
Washington, D.C. 20360

Commander
U.S. Naval Ordnance Laboratory
Attn: Librarian
White Oak, Maryland 20910

Director
Office of Naval Research
Boston Branch
495 Summer Street
Boston, Massachusetts 02210

Commander (ADL)
Naval Air Development Center
Attn: NADC Library
Johnsville, Warminster,
Pennsylvania 18974

JOINT SERVICES REPORTS DISTRIBUTION LIST (continued)

Commander (Code 753)
Naval Weapons Center
Attn: Technical Library
China Lake, California 93555

U. S. Naval Oceanographic Office
Attn: M. Rogofsky, Librarian (Code 1640)
Washington, D. C. 20390

Commanding Officer
Naval Weapons Center
Corona Laboratories
Attn: Library
Corona, California 91720

Other Government Agencies

Dr H. Harrison, Code RRE
Chief, Electrophysics Branch
National Aeronautics and
Space Administration
Washington, D. C. 20546

Commanding Officer (56322)
Naval Missile Center
Point Mugu, California 93041

NASA Lewis Research Center
Attn: Library
21000 Brookpark Road
Cleveland, Ohio 44135

W. A. Eberspacher, Associate Head
Systems Integration Division, Code 5340A
U. S. Naval Missile Center
Point Mugu, California 93041

Los Alamos Scientific Laboratory
Attn: Reports Library
P. O. Box 1663
Los Alamos, New Mexico 87544

Commander
Naval Electronics Laboratory Center
Attn: Library
San Diego, California 92152

Mr M. Zane Thornton
Deputy Director
Center for Computer Sciences and
Technology
National Bureau of Standards
U. S. Department of Commerce
Washington, D. C. 20234

Deputy Director and Chief Scientist
Office of Naval Research Branch Office
1031 East Green Street
Pasadena, California 91101

U. S. Post Office Department
Library - Room 6012
12th & Pennsylvania Ave., N. W.
Washington, D. C. 20260

Library (Code 2124)
Technical Report Section
Naval Postgraduate School
Monterey, California 93940

Glen A. Myers (Code 52Mv)
Assoc Professor of Electrical Engineering
Naval Postgraduate School
Monterey, California 93940

Commanding Officer (Code 2064)
Navy Underwater Sound Laboratory
Fort Trumbull
New London, Connecticut 06320

Non-Government Agencies

Director
Research Laboratory of Electronics
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139

Commanding Officer
Naval Avionics Facility
Indianapolis, Indiana 46241

Mr Jerome Fox, Research Coordinator
Polytechnic Institute of Brooklyn
333 Jay Street
Brooklyn, New York 11201

Director
Naval Research Laboratory
Attn: Library, Code 2039 (ONRL)
Washington, D. C. 20390

Director
Columbia Radiation Laboratory
Columbia University
538 West 120th Street
New York, New York 10027

Commanding Officer
Naval Training Device Center
Orlando, Florida 32813

JOINT SERVICES REPORTS DISTRIBUTION LIST (continued)

Director
Coordinate Science Laboratory
University of Illinois
Urbana, Illinois 61801

Director
Stanford Electronics Laboratory
Stanford University
Stanford, California 94305

Director
Microwave Laboratory
Stanford University
Stanford, California 94305

Director
Electronics Research Laboratory
University of California
Berkeley, California 94720

Director
Electronics Sciences Laboratory
University of Southern California
Los Angeles, California 90007

Director
Electronics Research Center
The University of Texas at Austin
Engineering-Science Bldg 110
Austin, Texas 78712

Division of Engineering and
Applied Physics
210 Pierce Hall
Harvard University
Cambridge, Massachusetts 02138

Dr G. J. Murphy
The Technological Institute
Northwestern University
Evanston, Illinois 60201

Dr John C. Hancock, Head
School of Electrical Engineering
Purdue University
Lafayette, Indiana 47907

Dept of Electrical Engineering
Texas Technological University
Lubbock, Texas 79409

Aerospace Corporation
P. O. Box 95085
Attn: Library Acquisitions Group
Los Angeles, California 90045

Airborne Instruments Laboratory
Deerpark, New York 11729

The University of Arizona
Department of Electrical Engineering
Tucson, Arizona 85721

Chairman, Electrical Engineering
Arizona State University
Tempe, Arizona 85281

Engineering and Mathematical
Sciences Library
University of California at Los Angeles
405 Hilgred Avenue
Los Angeles, California 90024

Sciences-Engineering Library
University of California
Santa Barbara, California 93106

Professor Nicholas George
California Institute of Technology
Pasadena, California 91109

Aeronautics Library
Graduate Aeronautical Laboratories
California Institute of Technology
1201 E. California Boulevard
Pasadena, California 91109

Hunt Library
Carnegie-Mellon University
Schenley Park
Pittsburgh, Pennsylvania 15213

Dr A. G. Jordan
Head of Dept of Electrical Engineering
Carnegie-Mellon University
Pittsburgh, Pennsylvania 15213

Case Western Reserve University
Engineering Division
University Circle
Cleveland, Ohio 44106

Hollander Associates
Attn: Librarian
P. O. Box 2276
Fullerton, California 92633

Dr Sheldon J. Welles
Electronic Properties Information Center
Mail Station E-175
Hughes Aircraft Company
Culver City, California 90230

Illinois Institute of Technology
Department of Electrical Engineering
Chicago, Illinois 60616

JOINT SERVICES REPORTS DISTRIBUTION LIST (continued)

Government Documents Department
University of Iowa Libraries
Iowa City, Iowa 52240

The Johns Hopkins University
Applied Physics Laboratory
Attn: Document Librarian
8621 Georgia Avenue
Silver Spring, Maryland 20910

Lehigh University
Department of Electrical Engineering
Bethlehem, Pennsylvania 18015

Mr E. K. Peterson
Lenkurt Electric Co. Inc.
1105 County Road
San Carlos, California 94070

MIT Lincoln Laboratory
Attn: Library A-082
P. O. Box 73
Lexington, Massachusetts 02173

Miss R. Joyce Harman
Project MAC, Room 810
545 Main Street
Cambridge, Massachusetts 02139

Professor R. H. Rediker
Electrical Engineering, Professor
Massachusetts Institute of Technology
Building 13-3050
Cambridge, Massachusetts 02139

Professor Joseph E. Rowe
Chairman, Dept of Electrical Engineering
The University of Michigan
Ann Arbor, Michigan 48104

New York University
Engineering Library
Bronx, New York 10453

Professor James A. Cadzow
Department of Electrical Engineering
State University of New York at Buffalo
Buffalo, New York 14214

Department of Electrical Engineering
Clippinger Laboratory
Ohio University
Athens, Ohio 45701

Raytheon Company
Research Division Library
28 Seyon Street
Waltham, Massachusetts 02154

Rice University
Department of Electrical Engineering
Houston, Texas 77001

Dr Leo Young, Program Manager
Stanford Research Institute
Menlo Park, California 94025

Sylvania Electronic Systems
Applied Research Laboratory
Attn: Documents Librarian
40 Sylvan Road
Waltham, Massachusetts 02154

Dr W. R. LePage, Chairman
Department of Electrical Engineering
Syracuse University
Syracuse, New York 13210

Dr F. R. Charvat
Union Carbide Corporation
Materials Systems Division
Crystal Products Department
8888 Balboa Avenue
P. O. Box 23017
San Diego, California 92123

Utah State University
Department of Electrical Engineering
Logan, Utah 84321

Research Laboratories for the
Engineering Sciences
School of Engineering and Applied Science
University of Virginia
Charlottesville, Virginia 22903

Department of Engineering and
Applied Science
Yale University
New Haven, Connecticut 06520

DOCUMENT CONTROL DATA - R & D		
<i>(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)</i>		
1. ORIGINATING ACTIVITY (Corporate author) Research Laboratory of Electronics Massachusetts Institute of Technology Cambridge, Massachusetts 02139		2a. REPORT SECURITY CLASSIFICATION Unclassified
		2b. GROUP None
3. REPORT TITLE Quarterly Progress Report No. 100		
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Research Progress Report for quarterly period ending November 30, 1970		
5. AUTHOR(S) (First name, middle initial, last name) See Author Index		
6. REPORT DATE January 15, 1971	7a. TOTAL NO. OF PAGES 280	7b. NO. OF REFS
8a. CONTRACT OR GRANT NO. DA 28-043-AMC-02536(E)	9a. ORIGINATOR'S REPORT NUMBER(S) No. 100	
b. PROJECT NO. 20061102B31F	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
c.		
d.		
10. DISTRIBUTION STATEMENT This document has been approved for public release and sale; its distribution is unlimited.		
11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY Joint Services Electronics Program Through U.S. Army Electronics Command	
13. ABSTRACT This report, the hundredth in a series of quarterly progress reports issued by the Research Laboratory of Electronics, contains a review of the research activities of the Laboratory for the three-month period ending November 30, 1970. Since this is a report on work in progress, some of the results may not be final. Following our custom of the past several years, in this issue we preface the report of each research group with a statement of the objectives of the group. These summaries of our aims are presented in an effort to give perspective to the detailed reports of this and ensuing quarters.		

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
General Physics Plasma Dynamics Communication Sciences and Engineering						