



Guide to the George A. Michael papers

Creator: George A. Michael

Dates: 1945-2000, bulk 1953-1991

Extent: 65.92 linear feet, 49 record cartons, 1 manuscript box, 2 oversize flat boxes, and 1 small flat box

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Abstract

The George A. Michael papers consist of material related to the growth of the supercomputing industry and Lawrence Livermore National Laboratory's (LLNL) computing activities while Michael worked there as a computational scientist from 1953 to 1991. The collection reflects Michael's key role in the advancement of supercomputing inside and outside of LLNL, with reports, manuals, articles, and records related to conferences and projects from LLNL, Los Alamos National Laboratory, and other computing companies and organizations. His personal projects are also represented.

Administrative Information

Access Restrictions

The collection is open for research.

Publication Rights

The Computer History Museum (CHM) can only claim physical ownership of the collection. Copyright restrictions may apply and users are responsible for satisfying any claims of the copyright holder. Requests for copying and permission to publish, quote, or reproduce any portion of the Computer History Museum's collection must be obtained jointly from both the copyright holder (if applicable) and the Computer History Museum as owner of the material.

Languages

The majority of the material in the collection is in English, but there is a small amount of material in French, German, and Italian.

Preferred Citation

[Identification of Item], [Date], George A. Michael papers, Lot X4269.2008, Box [#], Folder [#], Catalog [#], Computer History Museum.

Immediate Source of Acquisition

Gift of George A. Michael, 2007.

Repository

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Biographical/Historical Note

George Anthony Michael was born February 16, 1926, in Buffalo, New York. He first attended the University of Niagara in Niagara Falls, New York, and then moved across the country to attend the University of San Francisco, where he earned a degree in physics in 1952. The following year, Michael went to work as a theoretical physicist for Lawrence Livermore National Laboratory (LLNL) in Livermore, California, known then as the University of California Radiation Laboratory. Michael spent the majority of his career at LLNL.

During his 41-year career at LLNL, Michael played a large role in building the Laboratory's high performance computing (HPC) program, which led to LLNL gaining an international reputation as a leader in supercomputing. He co-founded the Salishan Conference on High-Speed Computing in 1981 and also the annual ACM/IEEE Supercomputing Conference, first held in 1988. Through these activities and other initiatives, Michael was essential in improving communications and dialogue between national laboratories, academia, government, and private industry in the field of high-performance computing.

Michael retired from LLNL in 1991, but continued to be active in the HPC community following his departure from the laboratory. Starting in 1995, Michael worked on compiling written histories and recording oral histories on the beginnings of computing at LLNL. Michael died on June 5, 2008, in Livermore, California.

Scope and Content of the Collection

The George A. Michael papers are primarily made up of records Michael collected while he worked as a computational scientist at LLNL from 1953 to 1991. His role in the development and advancement of supercomputing is well-represented in his papers.

The first series of the collection is made up of materials created at LLNL that document the lab's computing projects and research, computing environment and programs, administrative issues, and conferences and events. This series is broken up into eight subseries.

The rest of the collection consists of material created by or related to other companies and organizations, including a large number of computer manuals. The majority of manuals are from DEC, CDC, Remington Rand, and IBM, and these companies each have their own series in the collection. The other less-represented companies' manuals are grouped together in a separate series. Technical papers and reports published by universities, research groups, and the U.S. government are included in the collection. Additionally, there is a large number of periodicals, including magazines and journals, and promotional material from various companies. The collection also contains material related to computer conferences and workshops, many of which Michael attended or participated in as a speaker or leader. A small portion of the collection contains material from Los Alamos National Laboratory (LANL), including LANL conference records and technical reports.

The smallest portion of the collection is made up of Michael's personal papers. Most of these are related to his own projects and his role on the board of trustees in the early days of the Computer History Museum.

Arrangement

The collection is arranged into 12 series:

- Series 1, Lawrence Livermore National Laboratory records, 1950-1997
- Series 2, DEC manuals, 1961-1985
- Series 3, CDC manuals, 1962-1979
- Series 4, Remington Rand manuals, 1950-1962
- Series 5, IBM manuals, 1945-1992, bulk 1953-1975
- Series 6, Other manuals and specifications, 1952-1991
- Series 7, Technical papers and reports, 1955-1996
- Series 8, Conferences, presentations, workshops, and course materials, 1949-1994
- Series 9, Periodicals, articles, and clippings, 1954-2000
- Series 10, Promotional materials, catalogs, and directories, 1954-1994
- Series 11, Los Alamos National Laboratory records, 1953-1990, bulk 1970-1985
- Series 12, Personal papers, 1948-1995, bulk 1969-1985

Indexing Terms

Control Data Corporation
Digital Equipment Corporation

International Business Machines Corporation
Lawrence Livermore National Laboratory
Los Alamos National Laboratory
Michael, George A.
Remington Rand, Inc.
Supercomputing

Related Collections at CHM

Buckholtz, DeSaussure, and Michael Collection, Lot X2592.2004, Computer History Museum.

Oral History of George Michael, 2006, Lot X3418.2006, Computer History Museum.

Collection Contents

Series 1, Lawrence Livermore National Laboratory records, 1950-1997

This series consists of records created at LLNL from 1950 to 1997. Material includes reports, papers, and manuals published by LLNL, administrative documents and internal communications, conferences and workshops put on by LLNL, project records, and technical data. It is organized into the following subseries:

Subseries 1.1, Projects, 1958-1992

Subseries 1.2, Administrative records, 1959-1997, bulk 1970-1986

Subseries 1.3, Equipment, 1953-1990

Subseries 1.4, Periodicals and newsletters, 1952-1991

Subseries 1.5, Technical papers and reports, 1953-1987

Subseries 1.6, Manuals and specifications, 1950-1993

Subseries 1.7, Conferences, presentations, workshops, and course materials, 1955-1995, bulk 1974-1995

Subseries 1.8, Program listings and associated output, 1954-1984

Subseries 1.1, Projects, 1958-1992

This subseries contains material that documents projects and research undertaken by LLNL from 1958 to 1992. The majority of projects are related to supercomputing research, including the development of the S-1 supercomputer, mass storage, and optical scanning. The largest group from this subseries concerns a joint research and development project with the Massachusetts Institute of Technology (MIT) that focuses on dataflow computer architecture, including parallel computing. There is a smaller amount of material on the creation of the Defense Data Network for the U.S. Defense Communications Agency and research into the use of holograms in the medical field, computational mathematics, and spatial modeling. Some of the organizations and companies working with LLNL on projects in this subseries include Control Data Corporation, the U.S. Department of Energy, and Hughes Aircraft Company. There are also materials related to research trips between Japan and the United States that gave LLNL an overview of the Japanese computing industry. This subseries is arranged chronologically.

Subseries 1.2, Administrative records, 1959-1997, bulk 1970-1986

This subseries contains LLNL administrative records relating to personnel, policies, training, and events. The bulk of this subseries consists of materials relating to personnel and management. The personnel records include correspondence and writings about hiring and managing employees as well as organizational charts of LLNL's Computation Department. This subseries also contains administrative notes and messages left for Michael regarding appointments, contacts, and events. Many of the events documented in this subseries relate to scheduled visitors coming to the

laboratory and also LLNL employees visiting other institutions. Also included in this subseries are policy and planning records, including a "University of California Computing Plan, 1977-1982," which was created to develop methodologies for providing computing capacity and services throughout the UC system. Computer and network security is a significant topic in this subseries, with relevant LLNL policies and records about the NASA Ames/LLNL Security Discussion Group. Lastly, this subseries contains a small amount of organizational overviews and financial reports (including annual reports) from LLNL and from peer organizations, such as CERN and the Rutherford Appleton Laboratory. This subseries is arranged alphabetically by folder title.

Subseries 1.3, Equipment, 1953-1990

This subseries consists of records related to computing and the equipment used at LLNL, including computers and their input/output devices, operating systems, software, storage, and networking. The largest group in this subseries contains material about LLNL's research and procurement of graphical data processing equipment for the lab, including displays, filming equipment, microfilm, drawing devices, enlargers, copiers, and printers. A smaller, but significant, number of records is related to LLNL's computers, which include the UNIVAC-1 and DEC VAX, and the supercomputers UNIVAC LARC, CDC 6600, CDC 7600, CDC STAR-100, and Cray-1. There is also material related to ARPANET and LLNL's high-speed data communications system Octoport, storage options, time-sharing scheduling, and planning for equipment needs. This subseries is arranged alphabetically by folder title.

Subseries 1.4, Periodicals and newsletters, 1952-1991

This subseries is made up of newsletters, newspapers, and magazines published by LLNL for its employees, with most covering issues and updates related to computation at the lab. These date from 1952 to 1991. About half of these periodicals are published by the lab's computation department and are related to its computer network, Octopus. These include *Octogram*, *Octopus Communiqué*, and *Tentacle*. There is also a small group of newsletters published by the Society of Professional Scientists and Engineers, the union that represented engineers and scientists at LLNL. Additionally, there is a small number of publications that cover general LLNL news of interest to staff. This subseries is arranged alphabetically by folder title.

Subseries 1.5, Technical papers and reports, 1953-1987

This subseries contains technical papers and reports published by LLNL from 1953 to 1987. A small group of these were authored by Michael. The bulk of this subseries is made up of technical reports, with a smaller number of technical papers. The reports and papers span a range of computing topics, such as multiprocessors, archival storage, programming, and graphical processing. This subseries is arranged alphabetically by folder title.

Subseries 1.6, Manuals and specifications, 1950-1993

This subseries is made up of manuals and specifications created by LLNL for the machines and systems used at the lab. Materials date from 1950 to 1993. Included are programming and user manuals for the Cray-1, CDC 6600, CDC 7600, UNIVAC-1, LARC, PDP-1, PDP-10, PDP-11, and IBM 7094, 3600, 704, and 7030 computer systems. Also included are manuals for the Livermore Time Sharing System (LTSS), the network system Octopus, the operating system Chippewa, high-speed printers, and graphical processing programs and hardware. There is also a large number of LLNL Computation Division Computer Information Center reports, which consist of

descriptions and instructions for various programs, utilities, and subroutines. Specific programming language manuals include Praxis, TRIX, LRLTRAN, and Fortran. This subseries is arranged alphabetically by folder title.

Subseries 1.7, Conferences, presentations, workshops, and course materials, 1955-1995, bulk 1974-1995

This subseries consists of material relating to conferences, presentations, and courses that were held at or put on by LLNL. The conference with the largest amount of records is the Salishan Conference on High-Speed Computing, which Michael co-founded and organized in 1981. The Salishan Conference materials (named after its venue at the Salishan Lodge in Gleneden Beach, Oregon) include administrative correspondence, presentation materials, notes, schedules and agendas, lists of attendees, speaker information, and personal correspondence of people thanking Michael for organizing the conference, including a letter from Gordon Bell of DEC. The other conference that Michael co-founded, the ACM/IEEE Supercomputing Conference, is also documented in this series, but to a lesser extent. This series also contains a significant amount of presentation slides, notes, and administrative correspondence relating to presentations that took place at LLNL. Many of these presentations were given by members of LLNL's Computation Department, but some were also given by visiting representatives of other companies and organizations. Course materials—mostly from LLNL's continuing education program—and records relating to LLNL meetings are also included in this collection. This subseries is arranged alphabetically by folder title.

Subseries 1.8, Program listings and associated output, 1954-1984

This subseries contains program listings, output, and benchmarks from programs developed at LLNL. Programs documented in this subseries include a location routine (also called "Miller's routine"), a program for plotting figures on a chart called Plot1, a function titled "Hardy," a program that reads tapes and copies files called RESTORPU, an error-contingency routine, and a program titled Convolution Integral Film Program – nicknamed, "Nilsson's Nuggets." Programming languages represented include Fortran. Most of the output in this subseries consists of simulation output in the form of plots and graphs. Also included are program descriptions, benchmarks (performance tests), design drawings, and flowcharts. This subseries is arranged alphabetically by folder title.

Series 2, DEC manuals, 1961-1985

This series contains mostly manuals and reference cards published by the Digital Equipment Corporation (DEC). Many of the manuals in this series focus on the Programmed Data Processor (PDP) series of minicomputers, particularly the PDP-11. Also included are software manuals, many relating to the Fortran programming language, and manuals concerning other machines and systems, such as the VAX-11. One book contained in this series relates to DEC equipment and was published by DEC, but it is not specifically focused on a single machine or software system. This book is titled, "Introduction to minicomputer networks." This series is arranged alphabetically by folder title.

Series 3, CDC manuals, 1962-1979

This series contains manuals and specifications published by the Control Data Corporation (CDC) from 1962 to 1979. The machine with the largest amount of materials is the CDC 7600. Other CDC hardware documented in this series include the CDC STAR-100, CDC 6000 series machines, CDC 8500, and CDC 1604. Programming languages represented in this series include FORTRAN, various versions of Compass, and COBOL. Also included are materials

relating to the CDC Chippewa operating system. This series is arranged alphabetically by folder title.

Series 4, Remington Rand manuals, 1950-1963

This series contains manuals, program descriptions, notes, and a small amount of memoranda relating to UNIVAC systems and Remington Rand. The largest part of this series relates to UNIVAC LARC (Livermore Advanced Research Computer), which was designed in order to run programs and simulations relevant to projects at LLNL. Another focus of the materials in this series is on the UNIVAC I, with manuals and other documents including publications by Remington Rand, software documentation, and memoranda and technical papers relevant to UNIVAC I machines. This series is arranged chronologically.

Series 5, IBM manuals, 1945-1992, bulk 1953-1975

This series primarily contains manuals published by the International Business Machines Corporation (IBM), with a small amount of specifications and technical bulletins that contain addenda to manuals. IBM machines with the largest amounts of documentation in this series include the IBM 704, 709, 7090, 7030, 1401, 1440, and 1460. Also included are instructional guides for using programming languages: COBOL, Basic, DOS 3.1, and FORTRAN. Other types of machines covered in these manuals include accounting machines, punched card machines, printers, and collators. This series is arranged chronologically.

Series 6, Other manuals and specifications, 1952-1991

This series is made up of manuals and specifications from companies and for systems that do not have their own series in the collection, dating from 1952 to 1991. Included are manuals for computer systems and components from companies like Convergent Technologies, Cray, Hewlett Packard, Integrated Software Systems Corporation, Intel, Scientific Data Systems, Technical Design Labs, Varian, and Texas Instruments. There are several manuals for Unix and CP/M operating systems, as well. Also included are user's manuals for commercial software and manuals for hardware components, such as keyboards, hard drives, graphics equipment, and the Unicon laser storage system. There are also a number of manuals specifically published for programmers and developers. This subseries is arranged alphabetically by folder title.

Series 7, Technical papers, 1955-1996

This series contains technical reports and papers on various computing and supercomputing topics dating from 1955 to 1996. A little less than half of these were published by American, European, and Japanese universities, including Stanford, Carnegie-Mellon, UC Berkeley, University of Illinois at Urbana-Champaign, the Royal Institute of Technology in Stockholm, and Osaka University. About a quarter of the reports were published by different departments of the U.S. government, including the Department of the Navy, the Department of Defense, the Department of Energy, the Department of Commerce's National Technical Information Service, and NASA. Lastly, there are papers and reports published by technology companies and research groups, such as IBM, the RAND Corporation, Eastman Kodak, General Electric, Lockheed, Sandia Laboratories, and SRI. This series is arranged alphabetically by folder title.

Series 8, Conferences, presentations, workshops, and course materials, 1949-1994

This series contains materials from conferences, presentations, and courses that were not held at LLNL or Los Alamos National Laboratory. The conference that is most well-documented in this series is SIGGRAPH, which stands for the Special Interest Group on Computer Graphics. Included are SIGGRAPH conference proceedings published in the Association for Computing Machinery (ACM) periodical *Computer Graphics*, Michael's notes from these conferences,

workshop materials, computer graphics and postcards, pamphlets, and attendee lists. Other conferences and workshops that are significantly represented in this series include the 1983 Conference on Monte Carlo Methods and Future Computer Architectures held at Brookhaven National Laboratory, early IBM computation seminars (1949-1951), and the 1983 Parallel Architecture Workshop (PAW) at the University of Colorado, Boulder. The records relating to conferences and workshops where Michael served as a speaker, program chairman, or president are grouped together in this series. This series is arranged alphabetically by folder title.

Series 9, Periodicals, articles, and clippings, 1954-2000

This series consists of journals, magazines, newsletters, clippings from newspapers and magazines, and photocopies of articles and books from 1954 to 2000. The main focus of the material in this series is on computer technology. Companies and organizations with journals in this series include the Association for Computing Machinery, Argonne National Laboratory, the IEEE, and IBM. In addition to *Scientific American*, *Datamation*, and magazines about physics, computing, and specific computer systems, like the Commodore, this series has a large number of issues of *Call-A.P.P.L.E.*, a magazine published by the cooperative, independent Apple user group Apple PugetSound Program Library Exchange (A.P.P.L.E.). Newsletters in the series are from both computer and technology companies such as Computer Control Company, Sanborn Company, DEC, Kodak, and Hewlett Packard, and organizations such as SIGARCH, the Computer Architecture Technical Committee, the Society of Photo-Optical Instrumentation Engineers, and the Charles Babbage Institute. This series is arranged alphabetically by folder title.

Series 10, Promotional materials, catalogs, and directories, 1954-1994

This series contains promotional material and catalogs from 1954 to 1994. The bulk of the series is made up of product brochures, company overviews, technical specifications, marketing newsletters, and installation and operational brochures published by companies such as Digital Equipment Corporation, Burroughs, Goodyear Aerospace, Scientific Data Systems, Remington Rand, Amdahl, and Polaroid. This series also contains three 1979 volumes of *The Computer Display Review*, a subscription-based reference set that reviewed computer displays and related display products. Also included are catalogs and brochures for microscopes for use in the computer and semiconductor industry, hand tools, and lab supplies. This series is arranged alphabetically by folder title.

Series 11, Los Alamos National Laboratory records, 1953-1990, bulk 1970-1985

This series contains technical papers and reports, administrative records, manuals, and conference and presentation materials published by or related to Los Alamos National Laboratory (LANL). One large part of this series is composed of materials for two conferences hosted by LANL, both titled "Frontiers of Supercomputing." The first of these conferences took place in 1983, while the second 1990 conference revisited the themes of the first and was titled "Frontiers of Supercomputing II: A National Reassessment." Included are agendas, attendee lists, press, speaker photographs, and viewgraphs of many of the presentations for both conferences. Another large part of this series is made up of technical papers and reports. Most of these writings relate to supercomputing, with one authored by Michael – though some cover topics not related to computing, such as the LANL publications on rock physics, shale oil, and hydrodynamical equations. The rest of this series is made up of in-house programming manuals, LANL administrative records, an annual report, presentation materials, and other publications published by LANL. This series is arranged chronologically.

Series 12, Personal papers, 1948-1996, bulk 1969-1985

This series contains personal correspondence, materials relating to personal projects and research, books, clippings, photographs, and records from Michael's role on the Board of Trustees for the Digital Computer Museum (later renamed the Computer Museum and subsequently the Computer History Museum). Approximately half of this series is related to the Digital Computer Museum, with documents from its early years spanning 1981 to 1986. Of interest in this part of the series is correspondence between Gwen Bell, the first president of the Computer Museum in Boston, and Michael – with letters documenting museum planning and delegations of responsibilities. This series also contains materials from Michael's personal projects and research, which include records relating to various historical projects that Michael worked on – including correspondence with members of the American Federation of Information Processing Societies (AFIPS) regarding Michael's roles in the organization and his potential authorship of articles for the Annals of the History of Computing. This series is arranged alphabetically by folder title.

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
Folder List			
Lawrence Livermore National Laboratory records: Projects			
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Box 2	102734638	Computer filmmaking	1963-1965
Box 2; 3	102734634	Data flow computer joint research project with MIT	1963-1988; bulk 1977-1979
Box 3	102734642	Line Drawing System Model 1 (LDS-1)	1970-1974
Box 3; 4	102734647	Other projects and research	1971-1986
Box 4	102734637	S-1 supercomputer	1976-1985
Box 5; 6	102659257	Mass storage	1977-1992
Box 6	102659270	Japanese computing	1981-1985
Box 6	102734641	Panel on Large Scale Computing in Science and Engineering and SPREAD	1982-1983
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Box 9	102734663	Visits to Lawrence Livermore National Laboratory (LLNL) and other events	1977-1986

Lawrence Livermore National Laboratory records: Equipment

Box 10	102734664	CDC 6600 and 7600	1963-1984
Box 10	102734662	CDC STAR-100	1971-1976
Box 10	102734661	Cray	1971-1985
Box 10	102734656	DEC	1968-1990
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Box 11	102739075	Indices and schematics	1968-1976; 1981
Box 11	102734655	Networking	1975-1986
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Box 11; 12	102734665	Printing	1965-1985
Box 12	102734658	Programming	1970-1985
Box 12	102734653	Software	1983-1985
Box 12	102734651	Storage	1972-1987
Box 12	102734657	Time-sharing and production	1974-1987
Box 12	102734659	UNIVAC 1 and LARC	1953-1965

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
Lawrence Livermore National Laboratory records: Periodicals and newsletters			
Box 12	102734718	C.I.C. newsletter	1969-1971
Box 12	102734717	Computation bits	1952; 1959-1960
Box 12	102734711	Magnet, The	1959-1976
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Box 12	102734712	Octogram	1976-1987; bulk 1987
Box 12	102734719	Octopus communique	1977-1981
Box 12	102734714	Open letter to Bob Borchers	1988-1990
Box 12	102734713	Other newsletters and periodicals	1972-1998
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Box 12	102734708	Tentacle	1981-1989
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Box 13	102739081	Authored by George A. Michael	1964-1979
Box 13	102739079	Technical papers	1955-1983
Box 13	102739080	Technical reports	1953-1987
Lawrence Livermore National Laboratory records: Manuals and specifications			
Box 14; 21	102739133	CDC 6600 system and programming manuals	1965-1968
Box 14; 21	102734694	CDC 7600 system and programming manuals	1970-1982
Box 14	102739142	CIC reports	1965-1971
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Box 16	102739131	Computer Hardcopy Output Recording System (CHORS) manuals	1973-1983

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Box 17	102734695	Cray-1 system and programming manuals	1980-1993
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Lawrence Livermore National Laboratory records: Conferences, presentations, workshops, and course materials

Box 22	102739141	ACM/IEEE Supercomputing Conference	1991-1995
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Box 22	102739137	Computer Operations Committee (COC) meetings	1974
Box 22	102739129	Course materials	1955-1986
Box 22	102739140	IEEE Symposium on Mass Storage Systems	1990
Box 22	102739122	Lawrence Livermore National Laboratory (LLNL) workshop and conference proceedings	1975-1993
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Box 22	102739132	Microelectronics and Computer	1982

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
		Technology Corporation (MCC)	
Box 22; 23	102739138	Presentations at Lawrence Livermore National Laboratory (LLNL)	1977-1998
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Box 28	102734737	Programmed Data Processor (PDP) series manuals	1961-1974
Box 28	102734734	Reference cards	1961-1983
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Box 29	102734699	CDC 1604 manuals	1962
Box 29	102734700	CDC 3400, 3600 series COBOL reference manual	1966
Box 29	102734679	CDC 6000 series Chippewa operating system	1965
Box 29	102734678	CDC 6000 series reference manuals	1963-1972

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
Box 29	102734683	CDC 7600 series	1968-1972
Box 29	102734690	CDC 8500 preliminary reference manual	1970-1972
Box 30	102734706	CDC AA102-A customer engineering manual	1977
Box 30	102734692	CDC education applications software	1974
Box 30	102734688	CDC FORTRAN extended version 4 reference manual	1977
Box 30	102734696	CDC input/output specifications	1963-1967
Box 30	102734691	CDC NOS version 1	1979
Box 30	102734704	CDC peripheral devices	1963-1965
Box 30	102734687	CDC programming languages	1965-1976
Box 30	102734701	CDC STAR-100 hardware reference manuals	1970-1976
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Box 30; 31	102734740	UNIVAC I	1950-1956
Box 31	102734742	Other Remington Rand Univac manuals and publications	1955-1962
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IBM manuals			
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Box 32	102734724	Principles of operation bulletin	1950-1957
Box 32; 33	102734727	IBM 701, 704, 709-7090, and 7030	1953-1961
Box 33	102734722	IBM 650 bulletin and manuals	1955-1959
Box 33	102734730	IBM wiring principles and worksheets	1956-1960

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
Box 33	102734720	Other IBM manuals, reference cards, and guides	1956-1975
Box 33	102734728	IBM 1401, 1440, and 1460	1959-1964
Box 33	102734725	Programming language guides for COBOL, Basic, DOS 3.1, and FORTRAN	1961; 1984-1985
Box 33	102734721	Maintenance 1403 printer	1964-1966
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Box 35; 36	102739149	Hardware	1952-1988
Box 36	102739151	Hewlett Packard	1974-1980
Box 36	102734744	Integrated Software Systems Corporation	1981-1987
Box 36; 37	102734733	Intel, Scientific Data Systems (SDS), and other companies' computer systems	1961-1988
Box 37; 38	102734747	Programmers and developers' manuals	1960-1991
Box 38	102734745	Technical Design Labs, Inc.	1976-1977
Box 39	102739154	Texas Instruments	1973-1977
Box 39	102734732	Unicon	1977
Box 39; 40	102739152	Unix	1979-1984
Box 40	102734746	Users' manuals for commercial software products	1982-1991

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
Technical papers and reports			
Box 40	102734654	Carnegie-Mellon University Department of Computer Science	1974-1979
Box 40; 41	102734675	European and Japanese universities	1976-1985
Box 41	102659258	IBM	1955-1982
Box 41; 42	102734676	Other technology companies, research groups, and authors	1959-1996
Box 42	102734674	Other universities	1956; 1967-1990
Box 42	102734671	RAND Corporation	1950-1957
Box 42	102734670	Stanford University	1974-1981
Box 42; 43	102734677	U.S. government	1959-1996
Box 43	102734673	University of California, Berkeley	1977-1987
Box 43	102734672	University of Illinois at Urbana-Champaign	1957-1987
Conferences, presentations, workshops, and course materials			
Box 44	102739155	Conference and workshop materials featuring George A. Michael as presenter and/or program chair	1966-1989
Box 44	102739156	Conference on Monte Carlo Methods and Future Computer Architectures	1983
Box 44	102739158	Correspondence, pamphlets, and notes from computing conferences	1956-1992
Box 44; 45	102739153	Course materials	1972-1990
Box 45	102739157	International Business Machines Corporation (IBM) computation seminar proceedings	1949-1951
Box 45	102739160	Parallel Architecture Workshop (PAW)	1983
Box 45	102739161	Presentation materials collected	1981-1982

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
		and/or authored by Sidney Fernbach	
Box 45	102739162	Presentation materials related to supercomputers and computing at Lawrence Livermore National Laboratory (LLNL)	1969; 1983-1991
Box 45; 46	102739107	Proceedings from computing conferences	1956-1994
Box 46	102739150	SIGGRAPH (Special Interest Group on Computer Graphics)	1973-1994
Box 46	102739159	Workshop materials	1976-1994
Periodicals, articles, and clippings			
Box 47	102734705	Call-A.P.P.L.E. and Mac A.P.P.L.E.	1980-1986
Box 47	102739123	Charles Babbage Institute newsletter	1980-1988
Box 47	102739113	Clippings and articles	1962-1990
Box 47	102739124	Computer Architecture Technical Committee newsletter	1984-1986
Box 47; 48	102739146	Computer display review	1979
Box 48	102739119	Datamation	1960-1981
Box 48	102739125	HP key notes	1974-1982
Box 48	102739116	IBM journals	1964-1981
Box 48	102734703	Kodak tech bits	1963-1985
Box 48	102739118	L'Elaborazione automatica	1976-1979
Box 48	102739115	Mathematical intelligencer	1978-1990
Box 48	102739117	Optical engineer	1974-1975
Box 21; 48; 4	102739121	Other journals, magazines, and newsletters	1959-2000
Box 49	102739114	Photocopied books	1972-1974

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
Box 49	102739126	Right angle	1954-1966
Box 49	102739120	Scientific American	1966-1970
Box 49	102739127	Vector register	1987-1992
Promotional materials, catalogs, and directories			
Box 50	102739148	Bibliographies, indices, directories, and glossaries	1964-1987
Box 50; 51	102739049	Computer company products and overviews	ca. 1954-1994
Box 51	102739040	Hand tools and lab supplies brochures and catalogs	1975-1978
Box 51	102739147	Inventories and surveys	1955-1970
Box 51	102739051	Microscope brochures, specifications, and price sheets	1963-1977
Box 51	102739145	Product catalogs	1958; 1976-1985
Los Alamos National Laboratory records			
Box 52	102739035	Los Alamos National Laboratory (LANL) in-house programming manuals and output	1953-1985
Box 52	102739034	Administrative records	1961; 1971; 1980-1986
Box 52	102739032	Non-computing Los Alamos National Laboratory (LANL) project reports	1964; 1980
Box 52	102739033	Los Alamos National Laboratory (LANL) periodicals, technical papers, and catalogs	1970-1994
Box 52	102739036	Reports by others on supercomputing from Los Alamos National Laboratory (LANL)	1978-1984
Box 52	102739037	George A. Michael report on supercomputing	1980
Box 52	102739112	Los Alamos National Laboratory	ca. 1983

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
		(LANL) presentation on Amdahl's Law, computer speed, multiprocessors, and reusable software	
Box 52	102739039	Frontiers of Supercomputing	1983; 1990
Box 52	102739038	Proposal to develop new theories for spatial modeling	1984
Personal papers			
Box 52; 53	102734645	Digital Computer Museum, Computer Museum, and Computer History Museum	1981-1986
Box 53	102734643	Personal book collection	1948; 1967-1985
Box 53	102734640	Personal correspondence, photographs, and clippings	1969-1982
Box 53	102734644	Personal projects	1972-1995