

## **OVERVIEW OF THE COLLECTION**

**Title:** Whirlwind Computer Collection

**Collection Date(s):** 1945-1959

**Extent and Forms of Material:** 10.3 cubic feet (31 boxes)

**Creator:** Massachusetts Institute of Technology (M.I.T.)

**Abstract:** The bulk of the collection consists of correspondence, notes, memoranda, and reports documenting the Whirlwind Computer Project at the Massachusetts Institute of Technology (M.I.T.) from August, 1945 to January, 1959. The purpose of the project was the development of a device that would simulate airplanes in flight. As the project progressed, other applications of the computer evolved.

**Repository:** Archives Center, National Museum of American History, Smithsonian Institution, Washington, D.C. [archivescenter@si.edu](mailto:archivescenter@si.edu) 202-633-3270  
[www.americanhistory.si.edu/archives](http://www.americanhistory.si.edu/archives)

**Collection Number:** AC0290

**Processing Note:** Processed by Craig Orr (archivist), June, 1994, revised, Craig Orr, March 1998; revised Alison Oswald November, 2004; October ,2010.

## **INFORMATION FOR USERS OF THE COLLECTION**

**Conditions Governing Access:** The collection is open for research use.

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**Preferred Citation:** Title and date of item, Whirlwind Computer Collection, dates, Archives Center, National Museum of American History, Smithsonian Institution, box number X, folder number XX, digital file number XXXXXXXXX

## **IN-DEPTH INFORMATION ABOUT THE COLLECTION**

**Administrative/Biographical History:** Project Whirlwind was sponsored by the Special Devices Center of the Office of Naval Research from 1945 to 1952. The original objective of the project was the development of a device that would simulate airplanes in flight. As the project progressed, other applications of the computer evolved.

*Whirlwind Computer Collection*

The project was centered in the Servomechanisms Laboratory of the Massachusetts Institute of Technology (M.I.T.). In the course of the research, Whirlwind evolved from an aircraft simulator into a high speed digital computer and finally into a key element of the United States' early air defense system. In 1948, M.I.T., believing that it was inappropriate for an educational institution to be so heavily involved in air defense research, transferred Whirlwind responsibility to the new M.I.T. Lincoln Laboratory in 1952. There, under the direction of Jay Forrester, pioneering work was done on magnetic core memory. MITRE's Whirlwind group spun off from Lincoln Laboratory to the new MITRE Corporation in 1958. Whirlwind served SAGE (Semiautomatic Ground Environment) air defense activities until being retired in May of 1959.

Whirlwind I was of the high-speed electronic digital type, in which quantities were represented as discrete numbers, and complex problems were solved by the repeated use of fundamental arithmetic and logical operations. Computations were executed by fractional microsecond pulses in electronic circuits, of which the principal ones were the flip-flop, the gate coincidence circuit and the magnetic core memory. Whirlwind I used numbers of 16 binary digits; this length was selected to limit the machine to a practical size.

The Whirlwind I Computer was utilized by such projects as Navy Fire Control, Air Traffic Control, the Cape Cod System, Experimental SAGE Sector, and many others. Whirlwind I spawned two computers, the MTC (memory test computer) and TX-O (transistor computer), both developed by ESS Installation Group 63.

The Whirlwind I Computer and its facilities were later leased to the Wolf Research and Development Corporation, West Concord, Massachusetts, under Navy Lease Contract Nonr-2956(00) in 1963. Kent C. Redmond and Thomas M. Smith wrote a history of the project, *Project Whirlwind: Case History* (Bedford, Massachusetts: The MITRE Corporation, 1975).

**Scope and Content:** This collection consists of over 2,516 items, housed in 31 document boxes. The material is arranged into chronological order and covers the project dates of 1945-1959. The items were originally classified Secret, Confidential, and Unclassified.

The collection is arranged into four series: Series 1, Summary Reports; Series 2, Bi-weekly Reports; Series 3, Correspondence, Memoranda, and Reports; and Series 4, Indexes. The summary reports include originals of "Summary Report #1, April, 1946" and "Summary Report #2," in twenty-two volumes, and photocopies of summary reports #3 through #40. The biweekly reports, covering the period December, 1947 to May, 1953, are arranged chronologically. The bulk of the collection consists of correspondence, notes, memos, and reports. These date from August, 1945 to January, 1959 and are arranged chronologically. A 210-page index to the reports and correspondence (prepared by Whirlwind project personnel) is located in box 31. This guide has a table of contents and lists topic, author, date, and identification number for all items in the collection. Other indexes are located in boxes 30 and 31.

**System of Arrangement:** The collection is arranged into four series.

**Series 1, Summary Reports, 1946-1954**

**Series 2, Bi-weekly Reports, 1947-1953**

*For additional information, please contact the Archives Center at 202-633-3270 or [archivescenter@si.edu](mailto:archivescenter@si.edu)*

**Series 3, Correspondence, Memoranda, and Reports, 1945-1959**

**Series 4, Indices, undated**

**Acquisition Information:** The Whirlwind I Computer Project originated at the Servomechanics Laboratory at the Massachusetts Institute of Technology (M.I.T.) in 1945. The records were transferred in 1959 to the MITRE Corporation. In February, 1983, the records were donated to the Division of Physical Sciences and Mathematics of the National Museum of American History.

**Custodial History:** In September 1987, they were transferred to the Archives Center, NMAH. Additional records were transferred to the Archives Center in January, 1998.

**Existence and Location of Originals:** Project Whirlwind Collection is located at the Massachusetts Institute of Technology, Institute Archives and Special Collections (<http://libraries.mit.edu/archives/research/collections/collections-mc/mc665.html#ref31>). Originals of material on microfilm in series 16 of this collection are held at the Archives Center, National Museum of American History. They were donated in 1970 by the MITRE Corporation.

**Existence and Location of Copies:** Whirlwind Computer Collection records held in the Archives Center, National Museum of American History, were microfilmed by MITRE and the microfilm is (as of 2007) located in the Project Whirlwind Collection at the MIT Institute Archives (Series 16 of MC 665).

Digital copies of selected material are located in [DOME \(http://dome.mit.edu/\)](http://dome.mit.edu/), the MIT Libraries digital repository.

**Access Points:**

**Subject/Names:**

Everett, Robert  
Mitre Matrix  
Mitre Corporation

**Subject/Topical:**

Computer science  
Aerospace engineering  
Flight simulation  
Airplanes  
Computers  
Inventions  
Inventors

**Form/Genre:**

Papers  
Reports

**CONTAINER LISTING**

<u>Box</u>	<u>Folder</u>	
		<b>Series 1, Summary Reports, 1946-1954</b>
1		Summary Report #1, 1946 April
		Summary Report #2, Volumes, 1-8
		Whirlwind Computer Block Diagram, Volumes, 1-2, 1947 September
2		Summary Report #2, Volumes 9-13
3		Summary Report #2, Volumes 14-19
4	1-3	Summary Report #2, Volumes 20-22
	4	Summary Reports, Volumes 3-12, 1947-1949
	5	Summary Reports, Volumes 13-20, 1949-1954
5	1	Summary Reports, Volumes 21-28, 1949-1951
	2	Summary Reports, Volumes 29-35, 1952-1953
	3	Summary Reports, Volumes 36-38, 1953-1954
	4	Summary Reports, Volumes 39-40, 1954
		<b>Series 2, Bi-weekly Reports, 1947-1953</b>
6	1-7	1947 December-1949 March
7	1-5	1949 April-1950 June
8	1-7	1950 October-1952 March
9	1-6	1952 April-1953 May
		<b>Series 3, Correspondence, Memoranda, and Reports, 1945-1959</b>
10	1-9	1945 August – 1946 April
11	1-12	1946 May-1947 March
12	1-7	1947 April-1947 September
13	1-8	1947 October-1947 December
14	1-6	1947 December-1948 April
15	1-7	1948 April-1948 June
16	1-5	1948 July-1948 September
17	1-5	1948 October-1948 December
18	1-5	1948 December-1949 March
19	1-5	1949 April-1949 June
20	1-5	1949 July-1949 October
21	1-7	1949 November-1950 May
22	1-7	1950 June-1950 November
23	1-8	1950 December- 1951 July
24	1-8	1951 August-1952 March
25	1-8	1952 April-1952 November
26	1-13	1952 December-1953 December
27	1-16	1954 January-1955 April
28	1-19	1955 May-1957 May
29	1-20	1957 June-1959 January

*Whirlwind Computer Collection*

		<b>Series 4, Indices, undated</b>
30	1-5	Index prepared at MIT's Lincoln Lab
	6-13	Duplicate Indexes Index to Reports and Correspondence
31	1	Inventory of summary reports and bi-weekly reports