Guide to the Atomic Clocks Reference Collection

NMAH.AC.1265

NMAH Staff
Table of Contents

Collection Overview ........................................................................................................ 1
Administrative Information .............................................................................................. 1
Names and Subjects ........................................................................................................... 1
Container Listing .............................................................................................................. 3
  Series 1: Subject Files, 1925-2019.............................................................................. 3
Collection Overview

Repository: Archives Center, National Museum of American History
Title: Atomic Clocks Reference Collection
Identifier: NMAH.AC.1265
Date: undated
Extent: 13 Cubic feet (15 boxes, 1 map-folder)
Creator: Forman, Paul
Language: Some materials in Russian, French and German.

Administrative Information

Acquisition Information
Materials were collected by curator Paul Forman as he researched atomic clocks and then transferred to the Archives Center in 2011.

Processing Information
Processed by Archives Center staff, 2020.

Preferred Citation

Restrictions
Collection is open for research.

Conditions Governing Use
Collection items available for reproduction, but the Archives Center makes no guarantees concerning copyright restrictions. Other intellectual property rights may apply. Archives Center cost-recovery and use fees may apply when requesting reproductions.

Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:
Atomic clocks
Names:
Vessot, R. F. C. (Robert Frederick Charles), Physicist, 1930-2018
Container Listing

Series 1: Subject Files, 1925-2019

Box 1, Folder 1       Air Force, 1986-1989
Box 1, Folder 2       Allen, David W., 1979 June
Box 1, Folder 3       Allen, C.O., 1959-1960
Box 1, Folder 4       Ann Arbor, 1954-1988
Box 1, Folder 5       Army, organization for research and development, 1951-1954
Box 1, Folder 6       U.S. Army Signal Corps., electronics command resources, 1984-1986
Box 1, Folder 7       U.S. Army Signal Corps., Fort Monmouth, New Jersey, 1952-1986
Box 1, Folder 8       U.S. Army Signal Corps., Fort Monmouth, New Jersey, 1954-1985
Box 1, Folder 9       U.S. Army Signal Corps., Fort Monmouth, New Jersey, frequency control branch, 1956-1961
Box 1, Folder 10      U.S. Army Signal Corps., Fort Monmouth, New Jersey, frequency control branch, 1954-1985
Box 1, Folder 11      U.S. Army Signal Corps., Fort Monmouth, New Jersey, frequency control branch, 1958-1959
Box 1, Folder 12      U.S. Army Signal Corps., Research and Development Agency, 1957-1962
Box 1, Folder 13-17   U.S. Army Signal Corps., Engineering Laboratory (archival records), 1950s-1960s
Box 2, Folder 1       Atomic Clocks Research Program, 1984-1990
Box 2, Folder 2       Atomic Clocks, Sherman's critique, undated
Box 2, Folder 3       Atomic Clocks, Geiger history and chronology, 1927-1966
Box 2, Folder 4       Atomic Clocks, chronologies, undated
Box 2, Folder 5  Atomic Clocks, chronology file and meetings, 1950-1978
Box 2, Folder 6  Atomic Clocks, physico technical, 1940-1986
Box 2, Folder 7  Atomic Clocks, perplexities, 1955-1956
Box 2, Folder 8  Atomic Clocks, miscellaneous correspondence, 1985 July
Box 2, Folder 9  Atomic Clocks, interviews, table of contents, 1983-1984
Box 2, Folder 10  Australia, 1977-1979
Box 2, Folder 11  Bitter, Francis, 1925-1967
Box 2, Folder 12  Babb, D.D. , 1954-1960
Box 2, Folder 13  Bederson, 1960-1986
Box 2, Folder 14  Beehler, R.E. Boulder, NBS-I Cs SID, 1979-1980
Box 2, Folder 15  Beers, Y. , 1959-1984
Box 13              Bender, P. , 1983-09-13
                     1 Cassette tape
Box 13, Folder 26  Bender, Peter W. , 1958-1983
Box 2, Folder 16  Beringer, Robert, 1950-1951
Box 2, Folder 17  Bleaney, C.B.E. FRS, 1995
Box 2, Folder 18  Bloch, F. , 1946-1984
Box 2, Folder 19  Blembergen, N. , 1956
Box 13, Folder 27  Bloom Arnold L. , 1979-1980
Box 13              Bloom, Arnold L. [interview?], 1983-08-01
                     1 Cassette tape
Box 2, Folder 20  Bureau International de L'Heure, 1985
Box 2, Folder 21  Bomac Laboratories, Inc., 1961-1968
Box 2, Folder 22  Bomac Laboratories, Inc., undated
Box 2, Folder 23  Bottom, Virgil, 1985-1986
Box 2, Folder 24  Brooklyn Poly (Polytechnic Institute of Brooklyn), 1952
Box 2, Folder 25  Brosel, Jean, 1969-2019
Box 2, Folder 26  Carver, Thomas, 1960-1982
Box 2, Folder 27  Clemence, G.M., 1952-1965
Box 2, Folder 28  Conference Report about frequency standards, 1960-1968
Box 2, Folder 29  Curkendall, D.W. (deep space probe), 1980
Box 2, Folder 30  Daly, R.T. Jr., undated
Box 2, Folder 32  Dehmelt, 1956-1997
Box 2, Folder 33  Dehmelt, 1945-1966
Box 3, Folder 1  Dehmelt, 1951-1989
Box 3, Folder 2  Dicke, Robert H. cosmic background radiation lock in apparatus, 1967-1999
Box 3, Folder 3-4  Dicke, Robert H. Technical report, 1952-06-1955-08
Box 3, Folder 5  Dicke, Robert H., 1957-1985
Box 3, Folder 6  Dicke, Robert H., 1946-1987
Box 3, Folder 7  Dicke, Robert H., 1950-1959
Box 3, Folder 8  Dicke, Robert H. interview, 1983-05-02
Box 3, Folder 9  Dicke, Robert H. Signal Corps contract reports, 1951-1959
Box 3, Folder 10  Dicke, Robert H. Signal Corps contract reports, 1946-1994
Box 3, Folder 11  Duke University, 1946-1993
Box 3, Folder 12  Duke University, 1948-1988
Box 3, Folder 13  Duke University, Physics Department, 1951-1979
Box 3, Folder 14  Edmonds, Dean S., Jr., 1958
Box 3, Folder 15  Essen, Louis, 1949
Box 3, Folder 17  Frequency Control Symposium, 1960-1986
Box 3, Folder 18  Frequency Electronics, Inc. (Martin Bloch), 1982-1983
Box 13, Folder 29  Gas cell frequency standards, 1958-1979
Box 3, Folder 19  General radio, 1986-1989
Box 3, Folder 20  George, James, 1983-1986
Box 3, Folder 21  Goddard Space Flight Center, 1982
Box 3, Folder 22  Gordy, Walters (articles by), 1948-1952
Box 4, Folder 1  Gordy, Walter (correspondence), 1946-1951
Box 4, Folder 2  Grant, E.F., 1949-1954
Box 4, Folder 3  Greenwich Observatory, 1952-1987
Box 4, Folder 4  Hamilton, D.R., 1955
Box 4, Folder 5  Harvard University, Cruft Laboratory, 1945-1951
Box 4, Folder 6  Harvard University, Cruft Laboratory, 1948-1950
Box 4, Folder 7  Harvard University, Cruft Laboratory, 1950-1960
<table>
<thead>
<tr>
<th>Box 4, Folder 9</th>
<th>Harvard University, Lyman Laboratory of Physics, 1960</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box 4, Folder 10</td>
<td>Haun, R. Dee, 1957</td>
</tr>
<tr>
<td>Box 4, Folder 11</td>
<td>Haun, R. Dee (notebook 764, 804), 1953</td>
</tr>
<tr>
<td>Box 4, Folder 12</td>
<td>Haun, R. Dee (notebook 908, 960), 1954</td>
</tr>
<tr>
<td>Box 13, Folder 1</td>
<td>Haun, R. Dee, annuals of physics frequency standards, 1957</td>
</tr>
<tr>
<td>Box 13, Folder 2</td>
<td>Haun, R. Dee, cesium atomic beam rough short paper, 1955</td>
</tr>
<tr>
<td>Box 13, Folder 3</td>
<td>Haun, R. Dee, publications, 1955</td>
</tr>
<tr>
<td>Box 13, Folder 4</td>
<td>Haun, R. Dee, cesium atomic beam frequency standard (4th draft), 1955-02-27</td>
</tr>
<tr>
<td>Box 13, Folder 5</td>
<td>Haun, R. Dee, cesium atomic beam, homework, undated</td>
</tr>
<tr>
<td>Box 13, Folder 6</td>
<td>Haun, R. Dee, AB Conference, 1954</td>
</tr>
<tr>
<td>Box 13, Folder 7</td>
<td>Haun, R. Dee, well collimated atomic beam sources, 1955</td>
</tr>
<tr>
<td>Box 13, Folder 8</td>
<td>Haun, R. Dee, thesis calculations, undated</td>
</tr>
<tr>
<td>Box 13, Folder 9</td>
<td>Haun, R. Dee, power shift calculations, 1956</td>
</tr>
<tr>
<td>Box 13, Folder 10</td>
<td>Haun, R. Dee, shift with Ramsey Pask, early theory, 1956</td>
</tr>
<tr>
<td>Box 13, Folder 11</td>
<td>Haun, R. Dee, stark shift vs. RF Power Maxwell's theory, undated</td>
</tr>
<tr>
<td>Box 13, Folder 12</td>
<td>Haun, R. Dee, edge effect correction for stark plates, undated</td>
</tr>
<tr>
<td>Box 13, Folder 13</td>
<td>Haun, R. Dee, edge effect correction for stark plates, undated</td>
</tr>
<tr>
<td>Box 13, Folder 14</td>
<td>Haun, R. Dee, stark effect on HFS, 1957</td>
</tr>
<tr>
<td>Box 13, Folder 15</td>
<td>Haun, R. Dee, thesis correspondence, 1954</td>
</tr>
<tr>
<td>Box 13, Folder 16</td>
<td>Haun, R. Dee, thesis, 1955</td>
</tr>
<tr>
<td>Box 13, Folder 17</td>
<td>Haun, R. Dee, stark effect, 1956</td>
</tr>
</tbody>
</table>
Box 13, Folder 18  Haun, R. Dee, stark shift vs. RF power, undated
Box 13, Folder 19-20  Haun, R. Dee, thesis calculations data, 1956
Box 4, Folder 13  Hawkins, W.B., undated
Box 4, Folder 14  Hellwig, Helmut, 1976-1982
Box 4, Folder 15  Hinlin, House of Burke, 1982-1983
Box 4, Folder 16  Holloway, J.H., 1958-1961
Box 4, Folder 17  Hubbard, M.M., 1985-1986
Box 4, Folder 18  Hewlett-Packard, Inc., 1957-1983
Box 4, Folder 19  Hughes Research Laboratories, 1955-1958
Box 4, Folder 20  Hughes Research Laboratories, 1955-1959
Box 4, Folder 21  Husten, B.F., 1983
Box 4, Folder 22  Internal Design for Frequency Control [156-217], 1954
Box 4, Folder 23  Internal Design for Frequency Control [218-298], 1955
Box 4, Folder 24  Internal Design for Frequency Control [299-354], 1956
Box 4, Folder 25  Internal Design for Frequency Control [387-398], 1951
Box 4, Folder 26  Internal Design for Frequency Control [399-415], 1952
Box 4, Folder 27  External Design for Frequency Control [416-485], 1952-1954
Box 5, Folder 1  External Program for Frequency Control [486-597], 1954-1955
Box 5, Folder 2  External Program for Frequency Control [598-600], 1956
Box 5, Folder 3  External Program for Frequency Control [651-776], 1950-1956
Box 5, Folder 4  MIT Laboratory of Electronics [777-902], 1946
Box 5, Folder 5  MIT Laboratory of Electronics [903-999], 1946
Box 5, Folder 6  MIT Laboratory of Electronics [1000-1085], 1946
Box 5, Folder 7  Internal Program for Frequency Control, 1957
Box 5, Folder 8  Internal Program for Frequency Control, 1958
Box 5, Folder 9  External Program for Frequency Control, 1957-1958
Box 5, Folder 10 Internal Program for Frequency Control, 1959
Box 5, Folder 14 International Conference on Quantum Electronics, 1961
Box 5, Folder 15 International Telephone and Telegraph, 1958
Box 5, Folder 16 Instituto Elettrotecnico Nationale, Torino, 1941-1983
Box 5, Folder 17 Japanese Work, 1957-1984
Box 5, Folder 18 Japanese Work, 1952-1972
Box 5, Folder 19 Japanese Work, undated, 1904
Box 5, Folder 20 Japanese Work, 1961-1984
Box 5, Folder 21 Japanese Work, 1954-1960
Box 5, Folder 22 Japanese Work, 1950-1986
Box 13 Jechart, 1983-07-25
2 Cassette tapes
Box 5, Folder 23 Kastler, Alfred, 1951-2009
Box 6, Folder 1 Kastler, Alfred, 1951-2009
Box 6, Folder 2 Kern, Rob, 1982
Box 6, Folder 3 King, J.G., 1958-1981
| Box 6, Folder 4 | Kleppner, D., 1961-1995 |
| Box 6, Folder 5 | Laboratoire de l'Horloge Atomique, 1964-1984 |
| Box 6, Folder 6 | Laboratoire Primaire du temps et des Frequences, 1976-1982 |
| Box 6, Folder 7-9 | Laboratoire Suisse de Recherches Horloges, 1957-1984 |
| Box 6, Folder 10 | Lock in detector/detection (articles), 1934-1962 |
| Box 6, Folder 11 | Lyons, H., 1949-1951 |
| Box 6, Folder 12 | Lyons, H., 1949-1985 |
| Box 6, Folder 13 | Lyons, H., 1946-1965 |
| Box 6, Folder 14 | Lyons, H., 1949-1958 |
| Box 6, Folder 15 | Lyons, H., 1949-1959 |
| Box 6, Folder 16 | Lyons, H., 1949-1960 |
| Box 6, Folder 17 | Lyons, H., 1948-1960 |
| Box 6, Folder 18 | Lyons-Townes, 1955-1957 |
| Box 7, Folder 1 | Magnavox, 1982 |
| Box 7, Folder 2 | Mainberger, W., 1983 |
| Box 7, Folder 3 | Markowitz Time and Frequency 9Chapter 11), 1963 |
| Box 7, Folder 4 | McCoubrey, A., 1963-1982 |
| Box 7, Folder 5 | Michelangelo de maria/Dr. paul Forman, 1928 and undated |
| Box 7, Folder 6 | MIT Archives, Research Laboratory of electronics, document room, MIT Museum, 1983-1987 |
| Box 7, Folder 7 | MIT Research Laboratory of Electronics, Past, Present, Futures, 1974 |
| Box 7, Folder 8 | MIT Research Laboratory of Electronics (notes, images and articles), undated |
Box 7, Folder 9  MIT Research Laboratory of Electronics, 1944-1945
Box 7, Folder 10 MIT Research Laboratory of Electronics, 1946
Box 7, Folder 11 MIT Research Laboratory of Electronics, 1947-1948
Box 7, Folder 12 MIT Research Laboratory of Electronics, 1949
Box 7, Folder 13 MIT Research Laboratory of Electronics, 1950-1951
Box 7, Folder 14 MIT Research Laboratory of Electronics, 1952
Box 7, Folder 15 MIT Research Laboratory of Electronics, 1953-1956
Box 7, Folder 16 MIT Research Laboratory of Electronics, 1958-1959
Box 7, Folder 17 Motz, H., 1951
Box 7, Folder 18 National Bureau of Standards, Boulder, Colorado, ammonia clock, undated
Box 7, Folder 20 National Bureau of Standards, Boulder, Colorado, cesium beam frequency standards, undated
Box 8, Folder 1 National Bureau of Standards, Colorado, cesium beam frequency standards, 1956-1988
Box 8, Folder 2 National Bureau of Standards, miscellaneous, 1953, undated
Box 8, Folder 3 National Bureau of Standards, cesium beam illustrations, [1966?]
Box 9, Folder 1 National Bureau of Standards, histories, undated
Box 9, Folder 3 National Bureau of Standards, archival records, 1988-1989
Box 9, Folder 4-6 National Bureau of Standards, publications, undated
Box 9, Folder 7-8 National Bureau of Standards, Central Radio Propagation Laboratory (archival records), 1949-1950
Box 9, Folder 9-10 National Bureau of Standards, Central Radio Propagation Laboratory (archival records), 1950-1954

Box 9, Folder 11-13 National Company, Inc. (archival records), 1950s

Box 8, Folder 4-5 National Company, Inc., 1955-2001

Box 8, Folder 6 National Company, Inc., technical proposal for missile borne atomichron, undated
Includes photographs.

Box 8, Folder 7 National Company, Inc., annual reports, 1946-1967

Box 8, Folder 8 National Company, Inc., patents, 1959-1970

Box 8, Folder 9 National Company, Inc, publications and archival records, undated

Box 8, Folder 10 National Company, Inc., publications, undated

Box 8, Folder 11 National Company, Inc., mission, standards, undated

Box 8, Folder 12 National Company, Inc., histories, undated

Box 10, Folder 1 National Physical Laboratory, 1950-1986

Box 10, Folder 2 National Physical Laboratory, 1950-1983

Box 10, Folder 3 National Physical Laboratory, 1948-1953

Box 10, Folder 4 National Physical Laboratory, cs beam machines, 1955-1973

Box 10, Folder 5 National Physical Laboratory, atomichron and the second, 1954-1966

Box 10, Folder 6 National Research Council, Ottawa, cs beam standards, 1959-1980

Box 10, Folder 7 Naval Observatory (United States), 1961-1983

Box 10, Folder 8 Naval Research Laboratory, 1947-1984

Box 10, Folder 9 Naval Research, Office of, 1966-1986

Box 10, Folder 10 Oreuberg, A., 1958, 1983
Box 10, Folder 11  Osterdock, Terry, 1981
Box 10, Folder 12  Packard, M.E., undated
Box 10, Folder 13  Patent and Trademark office (U.S.), 1980-1986
Box 10, Folder 14  Paul., Wolfgang, 1951-1990
Box 10, Folder 16  Physicists in Federal Government (article), 1989
Box 10, Folder 17-18  Physikalisch Technische Bundesanstalt, undated
Box 10, Folder 19  Plotkin, H.H., undated
Box 10, Folder 20  Pomian, K., 1983-1984
Box 10, Folder 21  Pound, R.V., 1950-1989
Box 10, Folder 22  Powers, Kerns H., 1985
Box 10, Folder 23  precise Time and time interval (PTTI) Applications and Planning meeting, 1982
Box 10, Folder 24  Ramsay, Norman F., undated
Box 11, Folder 1-2  Radio Corporation America, undated
Box 11, Folder 3  Ramsey, Norman F., undated
Box 11, Folder 4  Richardson, John M., 1957
Box 11, Folder 5  Roberts, Arthur, 1984
Box 11, Folder 6  Rockwell International Corp., 1982
Box 11, Folder 7  Rubidium Maser Development, 1964-1969
Box 11, Folder 8  Rueger, L.J., 1985
Box 11, Folder 9  Sagalyn, Paul L., 1985
Box 11, Folder 10  Schwartz, Charles, 1983
Box 11, Folder 11  Singer, S.F., 1964
Box 11, Folder 12  Snyder, Wilbur F., 1985-1986
Box 11, Folder 13  Spencer, Jones H., undated
Box 11, Folder 14  Stanford University Microwave Laboratories, 1955-1956
Box 11, Folder 15  Strandberg, M.W.P., 1996
Box 11, Folder 16  Thomson-CSF, 1965-1985
Box 11, Folder 17  TRG Division, Alpha Industries, 1984
Box 11, Folder 18  TRW, Inc. (technology laboratories), 1958-1989
Box 11, Folder 19  USSR Gosstandart, 1963, 1976
Box 11, Folder 20  Vanier, Jacques, 1965-1983
Box 11, Folder 21  Van Vleck, J.H., 1942-1960
Box 11, Folder 22  Varian Associates, 1956-1987
Box 11, Folder 23  Varian Associates, 1956-1964
Box 12, Folder 1  Varian Associates, Atomic Beam Frequency Standards, 1964-1969
Box 12, Folder 6  Varian Associates, 1961-1983
Box 12, Folder 7  Varian Associates, Unit 8, 1965-1966
Box 12, Folder 8  Varian Associates, 1961-1986
Box 12, Folder 9  Varian Associates, 1957-1983
Box 12, Folder 10  Varian Associates, Gas cell frequency standards and related work, 1983
Box 12, Folder 11  Varian Associates, Gas cell frequency standards and related work, 1983
1 Cassette tape
Includes audio cassette of roundtable discussion on the development of Rb (87) frequency standards.

Box 12, Folder 12 Varian Associates, Gas cell frequency standards and related work, 1948-1983

Box 12, Folder 13 Varian Associates, Gas cell frequency standards and related work, 1940-1959

Box 12, Folder 14-15 Varian Associates, Gas cell frequency standards and related work, 1962

Box 12, Folder 16 Varian Associates, V-4700B spec sheet, undated

Box 12, Folder 17 Varian Associates, Gas cell frequency standards and related work, undated

Box 12, Folder 18 Varian Associates, Gas cell frequency standards and related work, 1960-1983

Box 12, Folder 19 Von Neumman, John, 1953

Box 12, Folder 20 Weber, Joseph, undated

Box 12, Folder 21 Weiss, Rainer, 1958

Box 12, Folder 22 Wiesner, Jerome B., 1984-1986

Box 12, Folder 23 Winkler, G., 1977-1983

Box 12, Folder 24 Winterberg, F., 1954, 1971, 1984

Box 12, Folder 25 Witlke, James P., 1957

Box 12, Folder 26 Yale University, Sloan Physics Laboratory, 1954-1958

Box 12, Folder 27 Yannoni, Nick, 1986

Box 12, Folder 28 Yates, J.G., 1954, 1985

Box 13, Folder 21 Zacharias, Jerrold R., 1942-1985

Box 13, Folder 22 Zavoisky, E., 1944

Box 13, Folder 23 Zeiger, H.J., 1952

Box 13, Folder 24 Zorn, J., 1980

Box 14, Item
OTC1265.1
Cutler, L., 1983-08-02
1 Cassette tape

Box 14, Item
OTC1265.2-4
Daly, R.T., 1984-05-28
3 Cassette tapes

Box 14, Item
OTC1265.5-7
Dehmelt, H.G., 1983-08-11
3 Cassette tapes

Box 14, Item
OTC1265.8
Essen, Louis, 1983-09-28
1 Cassette tape

Box 14, Item OTC1265.9-10
Kern, Robert and Vessot, Robert, 1983-07-14
2 Cassette tapes
AC1265-OTC1265.9.wav Digital files (Total running time: 43:44)
AC1265-OTC1265.10.wav Digital files (Total running time: 99:07)
OTC1265.9, Side 1, Conversation with Robert Kern, Robert Vessot and Paul Forman.
OTC1265.10, Side 1 total running time: 38:55.
OTC1265.10, Side 2, total running time: 60:12.
Conversation with Robert Kern, Robert Vessot and Paul Forman while examining photographs and other archival materials at an unidentified location.

Box 14, Item
OTC1265.11
Kleppner, David, 1983-06-09
1 Cassette tape

Box 14, Item
OTC1265.12-13
McCoubrey, A.M., 1984-08-24
2 Cassette tapes

Box 14, Item
OTC1265.14
O'Brien/King, 1983-06-07
1 Cassette tape

Box 14, Item
OTC1265.15
Packard, M.E. (Varian), 1983-08-03
1 Cassette tape

Box 14, Item
OTC1265.16
Plotkin, H.H., undated
1 Cassette tape

Box 15, Item
OTC1265.17
Ramsey, N.F., 1983-07-12
1 Cassette tape
Box 15, Item
OTC1265.18
Ruegger, L. , 1986-03-06
1 Cassette tape

Box 15, Item
OTC1265.19
Snyder, W.F., 1983-09-14
1 Cassette tape

Box 15, Item
OTC1265.20
Steele, 1986-06-24
1 Cassette tape

Box 15, Item
OTC1265.21
Sutcliffe, 1983-09-28
1 Cassette tape

Box 15, Item
OTC1265.22
Waks, N. , 1984-12-17
1 Cassette tape

Box 15, Item
OTC1265.23
Weiss, R. , 1983-06-09
1 Cassette tape

Box 15, Item
OTC1265.24
Wittke, J. , 1986-02-10
1 Cassette tape

Box 15, Item
OTC1265.25
Zacharias, 1983-06-09
1 Cassette tape

Return to Table of Contents