Guide to the Tantalus Synchrotron
Radiation Source Collection

NMAH.AC.0532

Alison Oswald.
# Table of Contents

Collection Overview ........................................................................................................ 1
Administrative Information .............................................................................................. 1
Arrangement..................................................................................................................... 2
Scope and Contents......................................................................................................... 2
Biographical / Historical............................................................................................... 2
Names and Subjects ....................................................................................................... 3
Container Listing ........................................................................................................... 4

Series 1: Notebooks and Logbooks, 1940 - 1986.................................................... 4
Series 2: Data and Operational Logbooks, 1965 - 1995........................................ 5
Series 5: Video Histories, 1995.............................................................................. 7
Collection Overview

Repository: Archives Center, National Museum of American History
Title: "Tantalus" Synchrotron Radiation Source Collection
Identifier: NMAH.AC.0532
Date: 1940-1995
Extent: 3.5 Cubic feet (11 boxes)
Creator: Tantalus Project
Rowe, Ednor "Ed"
Pruett, Charles
Olson, Cliff
Otte, Roger
Brown, Fred
Language: English

Administrative Information

Acquisition Information
The collection was donated by Ednor M. Rowe, Associate Director for Accelerator Development, Synchrotron Radiation Center, University of Wisconsin on November 20, 1995.

Provenance
In March 1994, Ednor Rowe contacted the National Museum of American History about the decommissioning of Tantalus. Museum curators decided to add part of the Tantalus accelerator ring to the collections in modern physics and also collected written documentation in the form of operational and data notebooks and logbooks that trace the creation, building, maintenance, and experiments carried out on the machine. There are also black and white photographs, slides, and oral and video documentation.

With the support of the Lemelson Center, the curators conducted videohistory interviews with Tantalus staff Ednor Rowe, Fred Brown, Cliff Olson, Charles Pruett, and Roger Otte. These discussions and reminiscences capture the human side of this high-tech machine’s history.

Related Materials
The Division of Information, Technology, and Society (now the Division of Medicine and Science) collected part of the Tantalus synchrotron radiation ring. See accession 1997.0078.

Processing Information
Processed by Alison Oswald, archivist, 1995.
Preferred Citation


Restrictions

The 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.

Biographical / Historical

At the University of Wisconsin during 1965-1967, a team led by particle physicist Ednor Rowe built a machine designed to analyze what goes on inside high-energy particle accelerators. This was the big, exciting technology in physics at the time. But just as the apparatus neared completion, funding was cut off. Its creators, feeling teased by fate and their government backers, dubbed the machine "Tantalus."

Rowe knew, though, that a by-product of Tantalus's operation was intense "synchrotron radiation," a form of ultra violet light that is used to study the structure of matter. He quickly adapted the machine to make this radiation available for use and soon the facility was crowded with experimenters from all over the world. Tantalus not only pioneered the use of synchrotron radiation, but created a research facility where both scientists and graduate students could perform hands-on work.

Researchers shared information and the results of their experiments in a collegial environment. There was no "King of the Ring" among these goal-oriented scientists. Those working at the Synchrotron Radiation Center always sought ways to improve upon Tantalus, with the result that Tantalus remained an important research tool until 1987, when it was retired and replaced by a newer machine, "Aladdin."

Scope and Contents

The collection consists primarily of notebooks, manuals, and other data and operational logbooks documenting the creation, building, and maintenance of Tantalus, and the experiments performed on the machine. Tantalus was the first dedicated synchrotron radiation laboratory and source. Series 5 and Series 6 include oral and video histories with Ednor Rowe, Fred Brown, Cliff Olson, Charles Pruett, and Roger Otte.

Arrangement

The collection is divided into six series.

Series 1, Notebooks and Logbooks, 1940-1986

Series 2, Data and Operational Logbooks, 1965-1995
Physical Characteristics and Technical Requirements

Gloves must be worn when handling unprotected photographs, negatives, and slides.

Names and Subject Terms

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

Subjects:
- Laboratories -- 1940-2000
- Physicists -- 1940-2000
- Physics -- Experiments -- 1940-2000
- Radiation -- 1960-1990
- Synchrotron radiation

Types of Materials:
- Notebooks
- Videotapes

Names:
- Synchrotron Radiation Center
- University of Wisconsin–Madison
# Container Listing

**Series 1: Notebooks and Logbooks, 1940 - 1986**

<table>
<thead>
<tr>
<th>Box, Folder</th>
<th>Description</th>
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<tbody>
<tr>
<td>Box 1, Folder 1</td>
<td>Amplidyne Manual, 1965</td>
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<tr>
<td>Box 1, Folder 2</td>
<td>Amplidyne maintenance procedure, circa 1966</td>
</tr>
<tr>
<td>Box 1, Folder 3-4</td>
<td>Experiment descriptions, 1967 - 1986</td>
</tr>
<tr>
<td>Box 1, Folder 5</td>
<td>Mura 50-MeV electron accelerator, 1964</td>
</tr>
<tr>
<td>Box 1, Folder 6</td>
<td>Alignment fixture calibrations, 1966</td>
</tr>
<tr>
<td>Box 1, Folder 7</td>
<td>Tantalus I and II design group meetings, 1975 - 1976</td>
</tr>
<tr>
<td>Box 1, Folder 8</td>
<td>Photographs, undated</td>
</tr>
<tr>
<td>Box 2</td>
<td>Low-inductance switching using parallel spark gaps, 1940 - 1967</td>
</tr>
<tr>
<td>Box 2</td>
<td>Kicker inflector, undated</td>
</tr>
<tr>
<td>Box 2</td>
<td>Magnet data book, 1969</td>
</tr>
<tr>
<td>Box 3</td>
<td>&quot;Project Bang&quot;, undated</td>
</tr>
<tr>
<td>Box 3</td>
<td>Magnet parameters (coil), 1966 - 1968</td>
</tr>
</tbody>
</table>

*Return to Table of Contents*
Series 2: Data and Operational Logbooks, 1965 - 1995

Box 3  
Storage ring maintenance log, 1968

Box 4  
Storage ring alignment, 1967 - 1969

Box 2  
Storage ring operational data (photos), undated

Box 4  
Storage ring data book-probes, 1965

Box 4  
Storage ring magnet alignment data (blueprints and drawings), 1966

Box 5  
Storage ring maintenance log, 1968

Box 5  
Storage ring operating data book one, 1968

Box 5  
Storage ring operating data book two, 1969

Box 6  

Box 6  
Storage ring data book three, 1977

Box 6  
Synchrotron radiation experiments, 1970

Box 7  
Tantalus amplidyne generators (photos), 1966 - 1986

Box 7  
Tantalus daily log (photos), 1970 June 15-1986 May 12

Box 7  
Tantalus spark gap logs (photos), 1967 March 13-1976 November

Box 8  
Storage ring running time log book, 1981 May 1 - 1995 August 31

Box 8  
Tantalus spark gaps log book, 1967 November 7-1968 October 8

Box 8  
Tantalus survey and optical alignment log, 1965 October-1967 June

Box 3  
Tantalus alignment fixture calibration, 1966

Return to Table of Contents
Series 5: Video Histories, 1995

Subseries 5.1: Original Videos, 1995

Box 9       OV 532.1, Tantalus Project, 1995
Box 9       OV 532.2, Tantalus Project, 1995
Box 9       OV 532.3, Tantalus Project, 1995
Box 9       OV 532.4, Tantalus Project, 1995
Box 9       OV 532.5, Tantalus Project, 1995
Box 9       OV 532.6, Tantalus Project, 1995
Box 9       OV 532.7, Tantalus Project, 1995
Box 9       OV 532.8, Tantalus Project, 1995
Box 9       OV 532.9, Tantalus Project, 1995
Box 9       OV 532.10, Tantalus Project, 1995
Box 9       OV 532.11, Tantalus Project, 1995
Box 9       OV 532.12, Tantalus Project, 1995

Subseries 5.2: Master Videos, 1995 April 25

Box 12      MV 532.1, Tantalus Project, 1995 April 25
Box 12      MV 532.2, Tantalus Project, 1995 April 25
Box 12      MV 532.3, Tantalus Project, 1995 April 25
Box 13      MV 532.4, Tantalus Project, 1995 April 25
Box 13      MV 532.5, Tantalus Project, 1995 April 25
Box 13      MV 532.6, Tantalus Project, 1995 April 25

Subseries 5.3: Reference Videos, 1995 May 24

Box 10      RV 532.1, Tantalus Project, 1995 May 24
Box 10      RV 532.2, Tantalus Project, 1995 May 24
Box 10      RV 532.3, Tantalus Project, 1995 May 24
Box 10      RV 532.4, Tantalus Project, 1995 May 24
Box 10        RV 532.5, Tantalus Project, 1995 May 24
Box 10        RV 532.6, Tantalus Project, 1995 May 24

Return to Table of Contents
Series 6: Oral History Cassettes, 1995 April 24 - 1995 April 25

<table>
<thead>
<tr>
<th>Box 11</th>
<th>OTC 532.1, Tantalus Project, 1995 April 24</th>
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<tr>
<td>Box 11</td>
<td>OTC 532.2, Tantalus Project, 1995 April 24</td>
</tr>
<tr>
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</tr>
<tr>
<td>Box 11</td>
<td>OTC 532.4, Tantalus Project, 1995 April 25</td>
</tr>
<tr>
<td>Box 11</td>
<td>OTC 532.5, Tantalus Project, 1995 April 25</td>
</tr>
<tr>
<td>Box 11</td>
<td>OTC 532.6, Tantalus Project, 1995 April 25</td>
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