



Smithsonian

National Museum of American History Kenneth E. Behring Center

Guide to the Tantalus Synchrotron Radiation Source Collection

NMAH.AC.0532

Alison Oswald.

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Collection Overview

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

"Tantalus" Synchrotron Radiation Source Collection, 1940-1995, Archives Center, National Museum of American History, Smithsonian Institution.

Restrictions

The collection is open for research.

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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

Series 3, User Beam Schedule Sheets, 1968-1986

Series 4, Storage Ring Blueprints, 1966-1972

Series 5, Video Histories, 1995

Series 6, Oral History Cassettes, 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

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

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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 aata 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	Storage ring running time log book, 1966, 1970 - 1980
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

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Series 3: User Beam Schedule Sheets, 1968 - 1986

Map-folder 1

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Map-folder 1

4: Storage Ring Blueprints, 1966 - 1972

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

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Series 6: Oral History Cassettes, 1995 April 24 - 1995 April 25

Box 11 OTC 532.1, Tantalus Project, 1995 April 24

Box 11 OTC 532.2, Tantalus Project, 1995 April 24

Box 11 OTC 532.3, Tantalus Project, 1995 April 24

Box 11 OTC 532.4, Tantalus Project, 1995 April 25

Box 11 OTC 532.5, Tantalus Project, 1995 April 25

Box 11 OTC 532.6, Tantalus Project, 1995 April 25

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