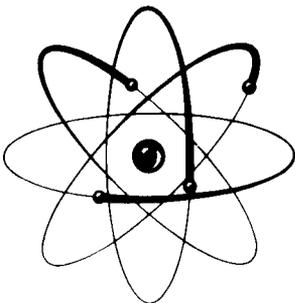


*A Guide to*

# **MANHATTAN PROJECT:**

## **Official History and Documents**



*A Guide to*

# **MANHATTAN PROJECT:**

## **Official History and Documents**

Edited by  
Paul Kesaris



A MICROFILM PROJECT OF  
UNIVERSITY PUBLICATIONS OF AMERICA, INC.

5630 Connecticut Ave.

Washington, D.C. 20015

Copyright © 1977 by University Publications of America, Inc.  
All rights reserved.  
ISBN 0-89093-199-2

### A NOTE ON THE USE OF THIS GUIDE

The reel numbers and part numbers into which *Manhattan Project: Official History and Documents* has been divided were dictated by the technical considerations of filming rather than by editorial considerations. Nevertheless, the reel numbers and part numbers, appearing as they do both in this guide and as targets in the film, indicate the filmed location of the books, volumes, and chapters of this collection. The original division of the collection into books, volumes, chapters, appendices, and individual reports has been preserved; and the numbers which appear on the right side of each page of this guide refer to the pagination of the original material. Portions of the collection which are still restricted have been noted as such; portions which were either not completed or not accessioned by the National Archives are not covered by this guide, and hence there are some gaps in the numbering of books, volumes, and chapters.

# Reel 1

## BOOK I: GENERAL

(Part 1)	<i>Volume 1: General</i> .....	Restricted
(Part 2)	<i>Volume 4: Auxiliary Activities</i>	
	Chapter 1: Legislative Contacts of the Manhattan District (31 pp.)	
	Foreword	
	Section 1: Introduction .....	1.1
	Section 2: Financial Program .....	2.1
	Section 3: Construction Program .....	3.1
	Section 4: Domestic Atomic Energy Legislation .....	4.1
(Part 3)	Chapter 2: Foundation of the National Laboratories (46 pp.)	
	General .....	2.1
	Argonne National Laboratory .....	2.5
	Brookhaven National Laboratory .....	2.20
	Proposed West Coast Laboratory .....	2.38
	Appendix: References	
	Chapter 3: Program for Production and Distribution of Radioisotopes (28 pp.)	
	Section 1: Value to Sciences and Medicine .....	3.1
	Section 2: Production of Radioisotopes in the Pile .....	3.3
	Section 3: Establishing the Program .....	3.10
	Section 4: Operation of the Program .....	3.20
	Appendix	
	Chapter 4: Research and Development of Atomic Energy for Power (20 pp.)	
	Introduction .....	4.1
	War Time History of Power Pile Research .....	4.1
	Authority for Research .....	4.3
	The Daniels Pile .....	4.3
	Advisory Committee Review .....	4.4
	Organization of the Oak Ridge Power Pile Program .....	4.5
	Scope of the Daniels Pile Project .....	4.6
	Factors Concerning Power Pile Development .....	4.8
	Other Stationary Piles .....	4.11
	Nuclear Energy for the Propulsion of Aircraft (NEPA) .....	4.14
	Nuclear Energy for Ship Propulsion .....	4.15
	Appendix: References	

	Chapter 5: Declassification and Distribution of Project Information (33 pp.)	
	Section 1: Reasons for Establishing the Declassification System . . . . .	5.1
	Section 2: Declassification Procedure and Organization . . . . .	5.9
	Section 3: Operation of Declassification Program . . . . .	5.16
	Section 4: The Program for Publication of Classified and Declassified Project Information . . . . .	5.25
	Section 5: Status as of 31 December 1946 . . . . .	5.30
(Part 4)	Chapter 6: Investigation of the After Effects of the Bombing in Japan (63 pp.)	
	Inception of the Mission . . . . .	6.1
	Purposes of the Mission . . . . .	6.2
	Organization in the United States . . . . .	6.3
	Organization in the Pacific . . . . .	6.4
	Itinerary of Colonel Warren and the Nagasaki Group . . . . .	6.5
	Itinerary of the Hiroshima Group . . . . .	6.8
	Physical Damage in Hiroshima and Nagasaki . . . . .	6.8
	Medical Findings in Hiroshima and Nagasaki . . . . .	6.11
	Intensity of Radioactivity Found in and Around Hiroshima and Nagasaki . . . . .	6.26
	Psychological Effects . . . . .	6.31
	Further Investigations in 1946 . . . . .	6.32
	Investigations by Others . . . . .	6.39
	Graphic Descriptions . . . . .	6.43
	Appendix: References	
(Part 5)	Chapter 7: Contributions of Representatives of the Manhattan District to the Discussions and Proposals for International Control (19 pp.)	
	Section 1: Introduction . . . . .	7.1
	Section 2: Contributions of Manhattan District Personnel . . . . .	7.7
(Part 6)	Chapter 8: Press Releases, no. 1 (8/6/45)—no. 101 (12/31/46) (280 pp.)	
(Part 7)	Chapter 8: Special Press Releases (444 pp.)	
	Statements Relating to the Atomic Bomb. His Majesty's Treasury. (1945) (23 pp.)	
	Statement by the Honourable C. D. Howe, Canadian Minister of Munitions and Supply. (8/6/45) (2 pp.)	
	A General Account of the Development of Methods of Using Atomic Energy for Military Purposes Under the Auspices of the United States Government, 1940-45.	
	H. D. Smyth (Smyth Report). (1945) (v, 188 pp.)	
	A Report on the International Control of Atomic Energy. State Department. (3/16/46) (xii, 61 pp.)	
	The Atomic Bombings of Hiroshima and Nagasaki. Manhattan Engi- neer District. (iv, 44 pp.)	
	Photographs of the Bombings of Hiroshima and Nagasaki. Manhat- tan Engineer District. (i, 102 pp.)	

# Reel 2

## BOOK I: GENERAL [continued]

(Part 1)	Chapter 9: Assistance on the Canadian Pile Project (32 pp.)	
	Beginning of the Project . . . . .	9.1
	Purpose . . . . .	9.2
	British-Canadian-American Co-operation . . . . .	9.3
	Description of Plant . . . . .	9.8
	"Zero Energy Exponential Pile", or "ZEEP" . . . . .	9.22
	Progress and Costs . . . . .	9.25
	Benefits to the United States . . . . .	9.26
	Appendix: References	
	Chapter 10: The Oak Ridge Institute of Nuclear Studies (14 pp.)	
	General . . . . .	10.1
	Preliminary Conference Sponsored by the University of Tennessee . . . . .	10.2
	The Oak Ridge Institute of Nuclear Studies . . . . .	10.3
	The Institute and the Oak Ridge Programs for Graduate Study . . . . .	10.4
	Establishment of the Graduate Program . . . . .	10.5
	Long-Range Objectives of the Institute of Nuclear Studies . . . . .	10.6
	District Approval of Objectives . . . . .	10.7
	Preparation of a Proposal . . . . .	10.8
	Incorporation of the Institute . . . . .	10.10
	Participating Institutions . . . . .	10.11
	Contract Negotiations . . . . .	10.12
	Appendix: References	
(Part 2)	Chapter 11: Ames Project (Iowa State College) (96 pp.)	
	Section 1: Introduction . . . . .	11.1
	Section 2: Metallurgy . . . . .	11.5
	Section 3: General Chemistry . . . . .	11.31
	Section 4: Analytical Chemistry . . . . .	11.49
	Section 5: X-Ray Structure . . . . .	11.52
	Section 6: Physics . . . . .	11.53
	Appendix "A": Reports	
	Appendix "B": Examples of Service Work	
	Appendix "C": List of Scientific Personnel	
(Part 3)	Chapter 12: Activities of the National Bureau of Standards (29 pp.)	
	General . . . . .	12.1
	Initiation of the Project . . . . .	12.2
	Specific Activities . . . . .	12.6
(Part 4)	Chapter 13: Preparation and Publication of the Smyth Report (24 pp.)	
	Title and Author . . . . .	13.1
	Inception and Purpose . . . . .	13.2
	Security Rules . . . . .	13.4
	Review and Approval . . . . .	13.6

	Release .....	13.17
	Credit and Criticism .....	13.18
	Appendix: References	
(Part 5)	Chapter 14: Investigation of Miscellaneous Processes of Separation of Uranium Isotopes (183 pp.)	
	Section 1: The Centrifuge Method .....	14.1
	Section 2: The Isotron Method .....	14.25
	Section 3: The Counter-Current Electromigration Method .....	14.36
	Section 4: The Counter-Current Reflux Molecular Stills Method .....	14.39
	Section 5: The Fractional Sublimation Method .....	14.44
	Section 6: The Ether-Water Method .....	14.46
	Section 7: The Ionic Centrifuge Method .....	14.48
	Section 8: The Photochemical Method .....	14.49
	Appendix	
(Part 6)	Top Secret Supplement: Storage Project .....	Restricted
(Part 7)	<i>Volume 5: Fiscal Procedures</i>	
	Fiscal Procedures (85 pp.)	
	Foreword	
	Summary	
	Section 1: Introduction .....	1.1
	Section 2: Estimates and Budgets .....	2.1
	Section 3: Contract Audit .....	3.1
	Section 4: Finance .....	4.1
	Section 5: Disbursing .....	5.1
	Section 6: Cost Accounting .....	6.1
	Section 7: Organization and Personnel .....	7.1
	Index	
(Part 8)	Appendices (244 pp.)	
	Appendix "A": Charts and Graphs	
	Appendix "B": Tabulations	
	Appendix "C": Documents	
(Part 9)	<i>Volume 6: Insurance Program</i>	
	Supplement (38 pp.)	
	Supplement to Section 1: Introduction .....	"S"1.1
	Supplement to Section 2: War Department Insurance Rating Plan .....	"S"2.1
	Supplement to Section 3: Modified Insurance Rating Plans .....	"S"3.1
	Insurance Program (183 pp.)	
	Foreword	
	Summary .....	S1
	Section 1: Introduction .....	1.1
	Section 2: War Department Insurance Rating Plan .....	2.1
	Section 3: Modified Insurance Rating Plans .....	3.1
	Section 4: Guaranteed Cost Insurance .....	4.1
	Section 5: Industrial Accident and Health Insurance .....	5.1
	Section 6: Employees' Benefit Plan .....	6.1

Section 7: Group Insurance .....	7.1
Appendix "A": Charts and Documents	
Appendix "B": Actuarial Data	
Appendix "C": Premium Analyses	
Appendix "D": Statutory Data	
Appendix "E": References	

## Reel 3

### BOOK I: GENERAL [continued]

#### (Part 1) *Volume 7: Medical Program*

##### Supplement (46 pp.)

Foreword	
Supplement to Section 2: Hazards of Operation .....	S2.1
Supplement to Section 3: Industrial Medicine .....	S3.1
Supplement to Section 4: Clinical Medicine and Dentistry .....	S4.1
Supplement to Section 5: Biologic and Health Physics Research .....	S5.1
Section 7: History of Medical Section Participation in the Manhattan Project Atomic Bomb Investigation (First Technical Service Detach- ment: Investigating the Bombings of Hiroshima and Nagasaki) .....	7.1
Section 8: History of Medical Participation in "Operation Cross- Roads" .....	8.1

##### Medical Program (279 pp.)

Foreword	
Summary	
Section 1: Introduction .....	1.1
Section 2: Hazards of Operations .....	2.1
Section 3: Industrial Medicine .....	3.1
Section 4: Clinical Medicine and Dentistry .....	4.1
Section 5: Biologic and Health Physics Research .....	5.1
Section 6: Organization .....	6.1
Appendix "A": Documents	
Appendix "B": References	
Appendix "C": Photographs	
Index	

#### (Part 2) *Volume 8: Personnel (237 pp.)*

Foreword	
Summary .....	S1-S15
Section 1: Introduction .....	1.1
Section 2: Recruiting Program .....	2.1
Section 3: Conservation and Utilization .....	3.1

Section 4: Labor Relations .....	4.1
Section 5: Wages and Salaries .....	5.1
Section 6: Selective Service Program .....	6.1
Section 7: Military Personnel .....	7.1
Section 8: Naval Personnel .....	8.1
Appendix "A": Charts and Tables	
Appendix "B": Documents	
Appendix "C": References	
Index	

(Part 3) *Volume 9: Priorities Program (97 pp.)*

Foreword	
Summary	
Section 1: Introduction .....	1.1
Section 2: District Authorizations and Organization .....	2.1
Section 3: Operations .....	3.1
Appendix "A": Documents	
Appendix "B": Charts	
Appendix "C": References	
Index	

(Part 4) *Volume 10: Land Acquisition (Clinton Engineer Works) (74 pp.)*

Foreword	
Summary	
Section 1: General .....	1.1
Section 2: Land Acquisition .....	2.1
Section 3: Organization .....	3.1

(Part 5) *Volume 10: Appendices (286 pp.)*

Appendix "A": Maps	
Appendix "B": Directives and Important Letters	
Appendix "C": Photographs	
Appendix "D": Tabulations	
Appendix "E": Graphs	
Appendix "F": Miscellaneous Information	
Appendix "G": Acquisition Forms (Standard)	
Appendix "H": Documents, etc., Available in Files in Real Estate Division, ORD	
Index	

# Reel 4

## BOOK I: GENERAL [continued]

### (Part 1) *Volume 11: Safety Program*

#### Safety Program (60 pp.)

Foreword

Summary

Section 1: Introduction . . . . .1.1

Section 2: Occupational Safety Program . . . . .2.1

Section 3: Public Safety Program . . . . .3.1

Section 4: Other Safety Activities . . . . .4.1

Section 5: Accomplishments . . . . .5.1

Section 6: Organization . . . . .6.1

#### Appendices (414 pp.)

Appendix "A": Charts and Graphs

Appendix "B": Tabulations

Appendix "C": Documents

Appendix "D": Forms

Appendix "E": Photographs

Appendix "F": Safety Promotion Materials

Appendix "G": National Safety Council Survey

Appendix "H": File References

Index

#### Supplement (26 pp.)

Foreword

Supplement to Section 1: Introduction . . . . . "S"1.1

Supplement to Section 2: Occupational Safety Program . . . . . "S"2.1

Supplement to Section 3: Public Safety Program . . . . . "S"3.1

Supplement to Section 4: Other Safety Activities . . . . . "S"4.1

Supplement to Section 5: Accomplishments . . . . . "S"5.1

Supplement to Section 6: Organization . . . . . "S"6.1

Section 7: Fire Prevention and Protection . . . . .7.1

#### Appendices to Supplement (326 pp.)

### (Part 2) *Volume 12: Clinton Engineer Works: Central Facilities (331 pp.)*

Foreword

Summary

#### PART A: GENERAL INTRODUCTION

Section 1: Description . . . . .1.1

Section 2: Site Selection and Preparation . . . . .2.1

Section 3: Basic Considerations . . . . .3.1

#### PART B: TOWN OF OAK RIDGE

Section 4: Planning and Design . . . . .4.1

Section 5: Construction . . . . .5.1

Section 6: Operations . . . . .6.1

Section 7: Housing .....	7.1
Section 8: Commercial Facilities .....	8.1
Section 9: School System .....	9.1
Section 10: Medical Facilities and Services .....	10.1
Section 11: Social and Welfare Facilities and Services .....	11.1
<b>PART C: AREA FACILITIES</b>	
Section 12: Electrical System .....	12.1
Section 13: Water Supply System .....	13.1
Section 14: Sewerage System .....	14.1
Section 15: Communications .....	15.1
Section 16: Roads, Streets, Walks, and Bridges .....	16.1
Section 17: Railroad System .....	17.1
Section 18: Passenger Transportation Service .....	18.1
Section 19: Security System .....	19.1

## Reel 5

### BOOK I: GENERAL [continued]

(Part 1)	<i>Volume 12: Appendices (267 pp.)</i>	
	Appendix "A": File References	
	Appendix "B": Maps	
	Appendix "C": Graphs, Charts, and Tables	
(Part 2)	Appendix "D": Photographs and Plans	
	Index	
(Part 3)	<i>Volume 13: Patents (76 pp.)</i>	
	Foreword	
	Summary	
	Section 1: Introduction .....	1.1
	Section 2: Policy .....	2.1
	Section 3: Applications for Patents .....	3.1
	Section 4: Contract Administration .....	4.1
	Section 5: Records .....	5.1
	Section 6: Organization .....	6.1
	Section 7: Cooperating Agencies .....	7.1
	Appendix "A-1 to A-10": Documents	
	Appendix "B": Patent Division Manual of Office Organization and Procedure	
	Index	
(Part 4)	<i>Volume 14: Intelligence and Security (352 pp.)</i>	
	Section 1: Introduction .....	1.1

Section 2: Counter-Intelligence .....	2.1
Section 3: Personnel and Company Clearance .....	3.1
Section 4: Plant Protection .....	4.1
Section 5: Shipment Security .....	5.1
Section 6: Security of Information .....	6.1
Section 7: Organization .....	7.1
Appendix "A": Letters and Organization Chart	
Appendix "B": Memoranda and Intelligence Bulletins	
Appendix "C": Miscellaneous, Forms, and Manuals	
Appendix "D": References	
Appendix "E": Copies of Newspaper Clippings Typical Leakage of Information Cases	
Appendix "F": Personnel of Intelligence and Security Division	
Index	

(Part 5) *Volume 14: Top Secret Appendix* (4 pp.)  
Top Secret Appendix

(Part 6) *Supplement to Volume 14* (136 pp.)

Foreword	
Summary	
Supplement to Section 1: Introduction	
Supplement to Section 2: Counter-Intelligence .....	S2.1
Supplement to Section 3: Personnel and Company Clearance .....	S3.1
Supplement to Section 4: Plant Protection .....	S4.1
Supplement to Section 5: Shipment Security	
Supplement to Section 6: Security of Information .....	S6.1
Supplement to Section 7: Organization .....	S7.1
Supplement to Appendix "A": Letters and Organization Chart	
Supplement to Appendix "C": Miscellaneous, Forms, and Manuals	
Index	

(Part 7) *Foreign Intelligence Supplement No. 1 to Volume 14* (157 pp.)

Foreword	
Section 1: Introduction .....	1.1
Section 2: Establishment of Alsos Missions .....	2.1
Section 3: Italian Investigation .....	3.1
Section 4: Western and Central European Investigation .....	4.1
Section 5: Investigation of Nuclear Research in Japan .....	5.1
Section 6: Organization and Personnel .....	6.1
Appendix "A": Documents	
Appendix "B": Reference	
Index	

(Part 8) *Foreign Intelligence Supplement No. 2 to Volume 14* (16 pp.)

Table of Contents	
Foreword	
Introduction .....	1
Preparations in the United States .....	2

Preparations in the United Kingdom .....	3
Appendix	
Index	
<i>Foreign Intelligence Supplement No. 3 to Volume 14 (18 pp.)</i>	
Introduction .....	1
Continuation and Development of Liaison .....	2
Status as of 31 December 1946 .....	7
Transfer to Atomic Energy Commission .....	10
Index	

## BOOK II: GASEOUS DIFFUSION

(Part 9) <i>Volume 1: General Features</i> .....	Restricted
(Part 10) <i>Volume 2: Research</i> .....	Restricted
(Part 11) <i>Volume 3: Design</i> .....	Restricted
(Part 12) <i>Volume 4: Construction</i> .....	Restricted
(Part 13) <i>Volume 5: Operation</i> .....	Restricted
(Part 14) <i>Top Secret Appendix to Volume 5</i> .....	Restricted
(Part 15) <i>Supplement to Top Secret Appendix to Volume 5</i> .....	Restricted

## Reel 6

### BOOK III: THE P-9 PROJECT

(Part 1) <i>The P-9 Project (Heavy Water) (272 pp.)</i>	
Foreword .....	F1, F2
Summary .....	S1-S21
Section 1: General .....	1.1
Section 2: Research and Development .....	2.1
Section 3: Design and Engineering .....	3.1
Section 4: Construction .....	4.1
Section 5: Operation .....	5.1
Section 6: Organization and Personnel .....	6.1
Appendices	
Appendix "A": Drawings	
Appendix "B": Photographs	
Appendix "C": Lists of Special Documents (in Files) (Technical Reports and Contracts)	

Appendix "D": List of Other Data in Files.	
Index .....	I1-I4

**BOOK IV: PILE PROJECT**

(Part 2) *Volume 1: General Features* (48 pp.)

Foreword	
Summary	
Section 1: Introduction .....	1.1
Section 2: Early Developments .....	2.1
Section 3: Administration .....	3.1
Section 4: Phases of the Pile Project .....	4.1
Section 5: Costs .....	5.1
Section 6: Intelligence and Security .....	6.1
Section 7: Law Enforcement and Jurisdiction .....	7.1
Section 8: Care of Real Estate .....	8.1
Section 9: Organization and Personnel .....	9.1
Appendix A: Glossary	
Index	

(Part 3) *Volume 2: Research*

Part I: Metallurgical Laboratory (196 pp.)

Foreword	
Summary	
Section 1: Introduction .....	1.1
Section 2: Operating Arrangements .....	2.1
Section 3: Development of Piles .....	3.1
Section 4: Problems in Pile Design .....	4.1
Section 5: Pile Operating Problems .....	5.1
Section 6: Development of Plutonium Separation Process .....	6.1
Section 7: Organization and Personnel .....	7.1
Appendix "A": Maps and Photographs	
Appendix "B": Charts and Tabulations	
Appendix "C": References	
Appendix "D": Documentary Forms	
Appendix "E": Glossary	
Index	

(Part 4) Part II: Clinton Laboratories (204 pp.)

Foreword	
Summary	
Section 1: Introduction .....	1.1
Section 2: Design and Construction .....	2.1
Section 3: Operation of Clinton Laboratories .....	3.1
Section 4: Production of Plutonium .....	4.1
Section 5: Development of a Separation Process .....	5.1
Section 6: Design and Operating Problems .....	6.1

	Section 7: Training of Personnel . . . . .	7.1
	Section 8: Organization and Personnel . . . . .	8.1
	Appendix "A": Maps, Drawings, Photographs, and Descriptions	
	Appendix "B": Charts and Tabulations	
	Appendix "C": References	
	Appendix "D": Glossary	
	Index	
(Part 5)	Top Secret Appendix (3 pp.)	
(Part 6)	<i>Volume 3: Design</i>	
	Design (189 pp.)	
	Foreword	
	Summary	
	Section 1: Introduction . . . . .	1.1
	Section 2: Site Criteria and Selection . . . . .	2.1
	Section 3: A Brief Description of the Operating Plant . . . . .	3.1
	Section 4: Metal Fabrication and Testing Area . . . . .	4.1
	Section 5: Pile Area . . . . .	5.1
	Section 6: Separation Area . . . . .	6.1
	Section 7: Service Facilities . . . . .	7.1
	Section 8: Richland Village . . . . .	8.1
	Section 9: Costs . . . . .	9.1
	Section 10: Organization and Personnel . . . . .	10.1
(Part 7)	Appendices (99 pp.)	
	Appendix "A": Maps and Diagrams	
	Appendix "B": Charts and Tabulations	
	Appendix "C": References	
	Appendix "D": Glossary	
	Index	

## Reel 7

### BOOK IV: PILE PROJECT [continued]

(Part 1)	<i>Volume 4: Land Acquisition (Hanford Engineer Works)</i>	
	Land Acquisition (82 pp.)	
	Foreword	
	Section 1: Selection of Site . . . . .	1.1
	Section 2: Description of Site . . . . .	2.1
	Section 3: Classification of Lands in the Area . . . . .	3.1
	Section 4: Acquisition Operations . . . . .	4.1
	Section 5: Progress of Acquisition . . . . .	5.1
	Section 6: Leases, Restriction Agreements and Permanent Easements . . . . .	6.1

	Section 7: Estimated Costs	
	Section 8: Accomplishments	
	Index	
(Part 2)	Appendices (136 pp.)	
(Part 3)	<i>Volume 5: Construction</i> (218 pp.)	
	Foreword	
	Summary	
	Section 1: Introduction . . . . .	1.1
	Section 2: Construction Planning . . . . .	2.1
	Section 3: Procurement of Equipment and Materials . . . . .	3.1
	Section 4: Construction Labor . . . . .	4.1
	Section 5: Temporary Construction . . . . .	5.1
	Section 6: Construction of the Operating Plant . . . . .	6.1
	Section 7: Construction of Service Facilities . . . . .	7.1
	Section 8: Construction of Richland Village . . . . .	8.1
	Section 9: Transportation . . . . .	9.1
	Section 10: Safety . . . . .	10.1
	Section 11: Costs . . . . .	11.1
	Section 12: Organization and Personnel . . . . .	12.1
(Part 4)	<i>Volume 5: Appendices</i> (577 pp.)	
	Appendix "A": Maps, Drawings, Photographs, and Descriptions	
(Part 5)	Appendix "B": Tabulations and Charts	
	Appendix "C": References	
	Appendix "D": Documentary Forms	
	Appendix "E": Glossary	
	Index	

## Reel 8

### BOOK IV: PILE PROJECT [continued]

(Part 1)	<i>Volume 6: Operation</i> (204 pp.)	
	Foreword	
	Summary	
	Section 1: Introduction . . . . .	1.1
	Section 2: Description of Plant Operations and Facilities . . . . .	2.1
	Section 3: Specifications for Final Product . . . . .	3.1
	Section 4: Operating Problems and Developments . . . . .	4.1
	Section 5: Operations Record . . . . .	5.1
	Section 6: Procurement of Materials . . . . .	6.1

	Section 7: Plant Safety .....	7.1
	Section 8: Transportation .....	8.1
	Section 9: Richland Village .....	9.1
	Section 10: Real Estate .....	10.1
	Section 11: Intelligence and Security .....	11.1
	Section 12: Communications .....	12.1
	Section 13: Public and Labor Relations .....	13.1
	Section 14: Property Accountability and Disposal .....	14.1
	Section 15: Demolition of Hanford Camp .....	15.1
	Section 16: Legal Aspects of the Management and Contractual Changeover .....	16.1
	Section 17: Costs .....	17.1
	Section 18: Organization and Personnel .....	18.1
(Part 2)	<i>Volume 6: Appendices (433 pp.)</i>	
	Appendix "A": Maps, Drawings, Photographs, and Descriptions	
(Part 3)	Appendix "B": Charts and Tabulations	
	Appendix "C": References	
	Appendix "D": Supplementary Information	
	Appendix "E": Glossary	
	Index	
(Part 4)	Top Secret Appendix .....	Restricted

## BOOK V: ELECTROMAGNETIC PROJECT

(Part 5)	<i>Volume 1: General Features (70 pp.)</i>	
	Foreword	
	Summary	
	Section 1: Introduction .....	1.1
	Section 2: Development of the Project .....	2.1
	Section 3: Description of Plant .....	3.1
	Section 4: Organization and Personnel .....	4.1
	Appendix "A": Charts	
	Appendix "B": Photographs	
	Appendix "C": Glossary	
	Index	
(Part 6)	<i>Volume 2: Research (221 pp.)</i>	
	Foreword	
	Summary	
	Section 1: Introduction .....	1.1
	Section 2: Operating Arrangements .....	2.1
	Section 3: Physical Research .....	3.1
	Section 4: Chemical Research .....	4.1
	Section 5: Organization and Personnel .....	5.1
	Appendix "A": Photographs	

- Appendix "B": Diagrams and Charts
- Appendix "C": Documents
- Appendix "D": References
- Appendix "E": Glossary
- Index

## Reel 9

### BOOK V: ELECTROMAGNETIC PROJECT [continued]

(Part 1) *Volume 3: Design (297 pp.)*

- Foreword
- Summary
- Section 1: General ..... 1.1
- Section 2: Description of Electromagnetic Plant ..... 2.1
- Section 3: Design Program ..... 3.1
- Section 4: Procurement of Equipment ..... 4.1
- Section 5: Organization and Personnel ..... 5.1
- Appendix "A": Documents
- Appendix "B": References
- Appendix "C": Photographs
- Appendix "D": Maps and Charts
- Appendix "E": Glossary of Technical Terms
- Index

(Part 2) *Volume 4: Silver Program (141 pp.)*

- Foreword
- Summary
- Section 1: Introduction ..... 1.1
- Section 2: Procurement ..... 2.1
- Section 3: Fabrication ..... 3.1
- Section 4: Returns to the Treasury ..... 4.1
- Section 5: Security Measures ..... 5.1
- Section 6: Accounting for Metal ..... 6.1
- Section 7: Organization and Personnel ..... 7.1
- Appendix "A": Charts
- Appendix "B": Documents
- Appendix "C": Photographs
- Appendix "D": References
- Index

(Part 3) *Volume 5: Construction (247 pp.)*

- Foreword
- Summary

Section 1: General .....1.1  
 Section 2: Contractual Arrangements .....2.1  
 Section 3: Construction Program .....3.1  
 Section 4: Materials of Construction .....4.1  
 Section 5: Labor Relations, Safety and Security .....5.1  
 Section 6: Organization and Personnel .....6.1  
 Appendix "A": Documents  
 Appendix "B": References  
 Appendix "C": Photographs  
 Appendix "D": Maps and Charts  
 Index

(Part 4) *Volume 6: Operation* (203 pp.)

Foreword  
 Summary  
 Section 1: Introduction .....1.1  
 Section 2: Contractual Arrangements .....2.1  
 Section 3: Mobilization .....3.1  
 Section 4: Plant Operation .....4.1  
 Section 5: Process Improvement .....5.1  
 Section 6: Security .....6.1  
 Section 7: Auxiliary Services .....7.1  
 Section 8: Organization .....8.1

(Part 5) *Volume 6: Top Secret Appendix* (14 pp.)

Appendix "A": Graphs, Charts and Tabulations  
 Appendix "B": Documents  
 Appendix "C": Photographs  
 Appendix "D": References  
 Appendix "E": Glossary  
 Index

(Part 6)

**BOOK VI: LIQUID THERMAL DIFFUSION [S-50]  
 PROJECT [182 pp.]**

Foreword  
 Summary  
 Section 1: Introduction .....1.1  
 Section 2: Research and Development .....2.1  
 Section 3: Design and Construction .....3.1  
 Section 4: Description of Plant .....4.1  
 Section 5: Operations .....5.1  
 Section 6: Organization and Personnel .....6.1  
 Appendix "A": Maps, Charts, Drawings, and Graphs  
 Appendix "B": Photographs  
 Appendix "C": List of Contractors  
 Appendix "D": Documents  
 Appendix "E": Tabulations

- Appendix "F": Bibliography of Scientific Publications
- Appendix "G": File References
- Appendix "H": Glossary of Technical Terms
- Index

(Part 7) Top Secret Supplement (3 pp.)

## Reel 10

### BOOK VII: FEED MATERIALS, SPECIAL PROCUREMENT, AND GEOGRAPHICAL EXPLORATION

- (Part 1) *Volume 1: General* ..... Restricted
- (Part 2) *Volume 2: Geographical Exploration* (161 pp.)
  - Foreword
  - Summary
  - Section 1: General ..... 1.1
  - Section 2: Acquisition of Land ..... 2.1
  - Section 3: Administration ..... 3.1
  - Appendices

### BOOK VIII: LOS ALAMOS PROJECT

- (Part 3) *Volume 1: General* (161 pp.)
  - Foreword
  - Summary
  - Section 1: General ..... 1.1
  - Section 2: Site Selection ..... 2.1
  - Section 3: Land Acquisition ..... 3.1
  - Section 4: Design and Engineering ..... 4.1
  - Section 5: Construction ..... 5.1
  - Section 6: Administration and Operation of Community ..... 6.1
  - Section 7: Organization and Personnel ..... 7.1
  - Index
- (Part 4) *Volume 1: Appendices "A"- "D"* (134 pp.)
- (Part 5) *Volume 1: Appendices "E" and "F"* (201 pp.)
- (Part 6) *Volume 2: Technical* ..... Restricted
- (Part 7) *Volume 2: Supplement* ..... Restricted
- (Part 8) *Volume 3: Auxiliary Activities*
  - Chapter 1: Los Angeles, California, Procurement Office (56 pp.)
  - Foreword

	Summary	
	Section 1: Introduction	1.1
	Section 2: Historical Account	2.1
	Section 3: Supplementary Information	3.1
	Appendix "A": Documents	
	Index	
(Part 9)	Chapter 2: Project Camel	Restricted
(Part 10)	Chapter 3: Activities of the Ohio State Cryogenic Laboratory	Restricted
(Part 11)	Chapter 4: Dayton Project	Restricted
(Part 12)	Chapter 5: Navy Participation (16 pp.)	
	Foreword	
	Section 1: Naval Mine Depot, Yorktown, Virginia	5.1
	Section 2: Naval Ammunition Depot, McAlester, Oklahoma	5.5
	Section 3: Naval Auxiliary Air Station, Salton Sea, California	5.7
	Section 4: Other Items of Navy Participation	5.9
	Chapter 6: Sandia (11 pp.)	
	Past History	1
	Early Assembly of Forces and Equipment by Manhattan District	1
	Plans and Operations	3
	Intelligence and Security	6
	Key Personnel	6
	Costs	8
	References	8
(Part 13)	Chapter 7: Boron (63 pp.)	
	General	1
	Columbia University	2
	The Norton Company	3
	The Harshaw Chemical Company	4
	Standard Oil Company of Indiana	4
	American Cyanamid Company	6
	Appendix "A": Documents	
(Part 14)	Chapter 8: Operation Crossroads (57 pp.)	
	Foreword	
	General	8.1
	Early Studies and Suggestions	8.3
	Authorization	8.6
	Designation of Commander of Joint Task Force One	8.8
	Designation of Deputy Task Force Commander for Technical Direc- tion	8.8
	The Tests	8.10
	Official Account, by Joint Task Force One, of Participation by the Manhattan District	8.12
	Los Alamos B-Division	8.20
	Manhattan District Personnel	8.38
	Results and Conclusions	8.45
	Appendix "A": Organization Charts	

Appendix "B": References

(Part 15) Chapter 9: Supplement ..... Restricted

**END OF BOOK VIII**

(Part 16) *Diplomatic History of the Manhattan Project* (47 pp.)

- Introduction ..... ii
- Events Prior to the Assignment of General Groves to the Manhattan Project, September 1942 ..... 1
- Events After Entry of General Groves into the Project and Prior to the Signing of the Quebec Agreement, August 19, 1943 ..... 5
- Quebec Agreement ..... 16
- Relationship With Canada ..... 24
- International Agreements on the Subject of Raw Materials ..... 25
- The Hyde Park Aide-Memoire ..... 33
- Proposed Revisions of Agreements Between the United States and the United Kingdom ..... 35
- The British Contribution ..... 42

## Reel 11

(Part 1) *Annexes to Diplomatic History of the Manhattan Project* (154 pp.)

(Part 2) *Diary of Col. Matthias (1943)* (253 pp.)

(Part 3) *Diary of Col. Matthias (1944)* (216 pp.)

(Part 4) *Diary of Col. Matthias (1945)* (127 pp.)

(Part 5) *Daily Log (Ashbridge)* (105 pp.)

(Part 6) *S-37 and T-37 Resources of the United States* (81 pp.)

- Summary and Conclusions ..... 1
- Part I: S-37 Resources of the United States ..... 9
- Part II: T-37 Resources of the United States ..... 68

(Part 7) *Historical Report: Project S-37* (46 pp.)

- Section 1: General ..... 1
- Section 2: Acquisition of Land ..... 3
- Section 3: Land Deals Consummated ..... 6
- Section 4: Appendix ..... 15

(Part 8) *Historical Report Supplement: Project S-37* (60 pp.)

- Section 1: General ..... 1
- Section 3: Land Deals Consummated ..... 2
- Section 4: Appendix ..... 8

# Reel 12

- (Part 1) *Los Alamos Y Project, Book I: Photographs, Maps, and True Copies of References of Layout and Construction of Facilities* (86 pp.)
- (Part 2) *Los Alamos Y Project, Book II: Army Organization; Administration and Operation* (134 pp.)
- (Part 3) *Preliminary Medical Report of Hiroshima and Nagasaki Bombings* (39 pp.)
- (Part 4) *Final Report on Hiroshima and Nagasaki* (216 pp.)
- Introduction
  - Summary
  - Section A: Medical Study
  - Part I: Clinical and Laboratory
    - Foreword ..... 1
    - Chapter 1: Personnel and Procedures ..... 3
    - Chapter 2: Description of Group Studied ..... 10
    - Chapter 3: Description of Findings ..... 16
    - Chapter 4: Cause of Injuries ..... 81
    - Chapter 5: Conclusion ..... 91
  - Part II: Pathology
    - Foreword ..... 96
    - Chapter 1: Description of Material Studied ..... 98
    - Chapter 2: Description of Findings ..... 101
    - Chapter 3: Conclusions ..... 142
    - Section B: Radiation ..... vol. II
    - Section C: Physical Damage ..... vol. III
- (Part 5) *The Atomic Bombings of Hiroshima and Nagasaki* (146 pp.)
- Foreword..... i
  - Introduction ..... ii
  - Appendix: Father Siemes' Eyewitness Account ..... 35
- General Report: Atomic Bomb Casualty Commission* (126 pp.)
- Preface
  - Part I: General Report ..... 1
  - Part II: Remarks on the Current Situation in Japan ..... 6
  - Part III: Appendices ..... 10
  - Part IV: Photographs ..... 112
- (Part 6) *Radiation in Hiroshima and Nagasaki* (135 pp.)
- Summary ..... 1
  - Gamma Radiation Measured in Japan ..... 2
  - Sample Analyses ..... 4
  - Conclusions ..... 45
  - Acknowledgments ..... 46
  - Table of Nomenclature ..... 47

References .....48

Appendix "A": Details of the Procedure for Separation of Radioactive  
Materials (Induced and Fission Produced) from Nagasaki Soil  
Samples

Appendix "B": Gamma Radiation in and around Nagasaki and Hiro-  
shima

Appendix "C": Japanese Reports of Radioactivity in Nagasaki and  
Hiroshima

