

ENGINEERING IN THE FAR NORTH

***A History of the U.S. Army Engineer District in Alaska
1867 – 1992***

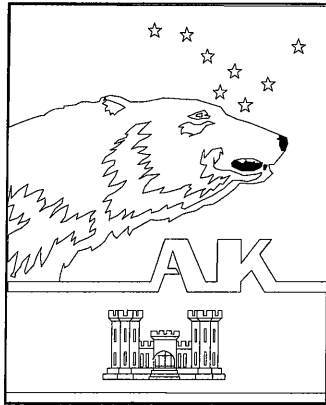


***LISA MIGHETTO, Ph.D.
CARLA HOMSTAD, M.A.***

HISTORICAL RESEARCH ASSOCIATES, INC.

1997

Cover illustration: E.J. FitzGerald, "Lining Through the Riffle."
Courtesy, University of Alaska Museum, Fairbanks.



FOREWORD

ALASKA DISTRICT 50TH ANNIVERSARY 1946-1996

Nowhere in this Nation has the imprint of the U.S. Army Corps of Engineers been more far reaching than in Alaska. Nearly a century has passed since the first major civil works project, Nome Harbor, was built. From Nome's gold rush to today's era of petroleum energy, Alaska has truly been the "last frontier."

The basic development of Alaskan infrastructure usually involved the Corps. We have been the leader in Arctic Engineering. Three of our state's major highways — the Richardson, Steese, and Elliott — were named for Engineer officers who were instrumental in opening up Alaska. During World War II, it was the Corps who constructed a vast network of defense facilities, including the famed Alaska Highway.

In 1996, the Alaska District celebrated its 50th anniversary. In the past 50 years, we've built, expanded, and revitalized all of the major military bases in Alaska. The District was an early leader in the environmental field. In 1984 we started removing contamination from World War II and Cold War bases. We've built over four dozen ports, the Chena Lakes Flood Control Project to remove the threat of catastrophic flooding in Fairbanks, and we continue to maintain navigation channels at many harbors vital to commerce and transportation in this remote land.

The Corps has helped in countless emergencies such as seasonal flooding, rebuilding from the disastrous 1964 Good Friday Earthquake, and arresting the damage caused by the grounding of the tanker Exxon Valdez. Our role in

FOREWORD

administering the Clean Water Act is a critical tool in maintaining the critical environmental balance in this vast, sensitive land.

As we approach our new century, the Alaska District has a stable work load, a skilled and dedicated work force, and the ability to continue our service to the state and nation. As this history shows, our heritage is colorful, our people outstanding, and our contributions significant. The U.S. Army Corps of Engineers is proud to be part of Alaska.



Peter A. Topp
Colonel, Engineers
District Engineer



Colonel Peter A. Topp



TABLE OF CONTENTS

PREFACE	v
ACKNOWLEDGEMENTS	vii
SECTION I: THE EARLY YEARS, 1867–1945	
I. PROLOGUE	3
The Geography of Alaska	3
European Exploration of the Far North	9
The Purchase and Administration of Alaska, 1867-1912	11
Army Engineers in Alaska, 1867-1939	15
Organization of the Corps in Alaska	23
II. BUILDING THE ALASKA DEFENSIVE POSTS	25
The Beginnings of War in Asia and Europe	25
Military Construction	27
Alaska Natives and the Corps	33
Types of Construction	34
Constructing the Major Alaska Defensive Garrisons	36
Defending the Panhandle	40
The Installation of the Aircraft Warning System (AWS)	45
Constructing Civilian Aeronautics Administration (CAA) Facilities	47
III. ALASKA'S LIFE LINES	55
Early Transportation Systems	55
The Threat of War	58
Seward Shipping Facilities	59
Fort Raymond	61
Seward Harbor Defenses	62
Whittier Project	64
Anchorage Harbor Improvements	68
The Port of Valdez	70
Gasoline and Oil Storage and Distribution	71
Reconnaissance of Fairbanks-Nome Routes	72
The Alaska Highway	73

TABLE OF CONTENTS

IV. THE OFFENSIVE IN THE ALEUTIAN ISLANDS 97
The Personal War 97
The First Line of Alaska Defense 98
The Japanese Invasion of Alaska 104
Shipping to the War Zone: Port of Juneau and Excursion Inlet Terminal . . . 110
Engineers Under Fire 112

SECTION II: THE COLD WAR YEARS, 1946–1974

V. THE ESTABLISHMENT OF THE ALASKA DISTRICT 149
Introduction 149
Defending Alaska During the Cold War 151
Early Operations and Administration of the Alaska District 154
Military Construction in Alaska, 1946-1949 164

VI. CIVIL WORKS IN ALASKA 175
Early Development 175
Water Resources Development 176
Harbor and Navigation Improvement 178
Specific Harbor and Navigation Improvement Projects 179
Hydroelectric Development 185
Energy Sources in Alaska 205
Oil Development 208

VII. RESPONSE TO DISASTERS 223
The Alaska Earthquake 223
The Flood in Fairbanks 249

VIII. MILITARY CONSTRUCTION 255
Creating a Permanent Military Establishment in Alaska 255
Development of Air Defense Systems 264
Development of Communication Systems 273
Military Construction in Alaska During the 1960s 276

SECTION III: THE MODERN ERA, 1975–1992

IX. THE ALASKA DISTRICT IN THE MODERN ERA 287
General Development of the Alaska District 287
Expanded Permitting Responsibilities 288
Distinctive Characteristics of the Alaska District 292

X. CIVIL PROJECTS 301
Natural Resource Development in Alaska 301
"Thinking Big" During the Modern Era 302
Water Resources Development 303
Rampart Dam Proposal 304
Susitna Hydroelectric Project 305
Snettisham Hydroelectric Project 318
Additional Hydropower Studies 324
Chena River Lakes Flood Control Project 325
Navigation Projects and Shoreline Erosion Control 333
Water Resources Development Acts 335

XI. MILITARY PROJECTS	337
General Developments in Military Projects During the Modern Era	337
Minimally Attended Radar System (MARS)	344
Shemya Air Force Base	352
Backscatter Air Defense Radar System	353
Improvements at King Salmon	355
801 Housing	358
Response to Changing Defense Needs	363
Eagle River Flats (ERF)	365
XII. ENVIRONMENTAL RESTORATION AND CLEANUP	371
Defense Environmental Restoration Program (DERP)	371
The Corps' Role in the Exxon Valdez Oil Spill Cleanup	381
XIII. EPILOGUE	395
APPENDIX	397
Acronyms for Army Corps of Engineers in Alaska	399
Alaska District Engineers: 1946–1995	400
Timeline: 1867–1989	401
ENDNOTES	405
BIBLIOGRAPHY	469
CREDITS: Photographs, Illustrations, Maps	484
INDEX	487
 NOTE ON THE AUTHORS	
 PHOTOGRAPHS OF ALASKA DISTRICT ENGINEERS	





PREFACE

Few agencies influenced the development of Alaska more than the U.S. Army Corps of Engineers (Corps). In the early 20th century, the Corps improved harbor facilities and helped create the first communications and road systems in Alaska. During World War II and the Cold War era, the agency built and expanded military bases and airfields in the Far North. The Alaska District, established in 1946, provided emergency assistance after the earthquake in 1964 and the Chena River Flood in 1967. Owing to the significance of the Corps' activities in the Far North, the agency contracted with Historical Research Associates, Inc. (HRA) to write the following history. It is divided into three periods: 1867-1945, 1946-1974, and 1975-1992.

The first section begins with the American purchase of Alaska, and focuses on military development during World War II. Many of the topics examined here — including the Corps' wartime construction and the strategic importance of Alaska — have already been investigated, most notably by Lyman L. Woodman and W.A. Jacobs. Accordingly, the authors relied primarily on secondary sources in the first section. The authors also drew from Brigadier General Benjamin B. Talley's extensive logs, as well as oral interviews with Corps personnel.

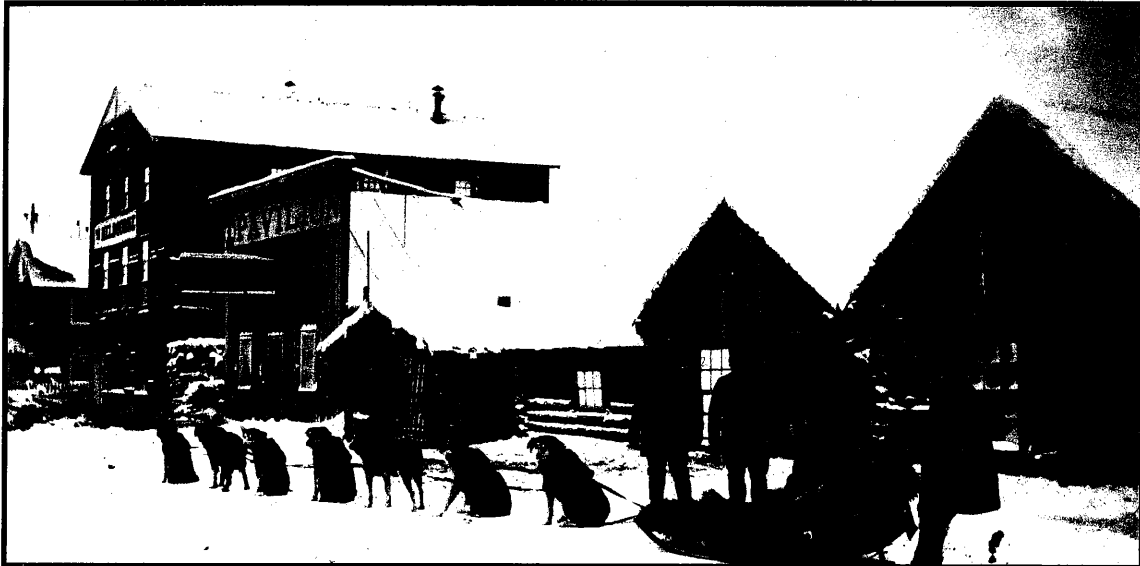
The second section analyzes the formation of the Alaska District, and the influence of the Cold War on civil and military projects, and how the development of Alaska has affected the Corps' work in the Far North.

The third section analyzes the continuing importance of military development in the modern era, and outlines the expansion of civil projects in Alaska. To date,

PREFACE

few historians have examined the Corps' recent activities in Alaska. For this reason, the authors conducted archival research for the history of the Cold War era and the modern period. In addition to consulting Corps materials at the Alaska District and the National Archives and Federal Records Centers in Anchorage and Washington, D.C., they reviewed a variety of primary sources at the University of Alaska, Alaska Resources Library, U.S. Fish and Wildlife Service, Z.J. Loussac Public Library, Historical and Fine Arts Museum, and the University of Washington. Although much of this research focused on the Army Engineers, the authors also consulted the records of other agencies and organizations to obtain their perspective on Corps activities in Alaska. In addition, the authors conducted interviews with Alaska District employees as well as personnel from other agencies.

The overarching theme in these three sections concerns the distinctive environment of the Far North. Few areas in the world present more rugged conditions than Alaska. The following history examines how the Corps adapted to the unique landscape and climate of the Far North, and how the Army Engineers devised innovative solutions to the problems they faced working in Alaska.





ACKNOWLEDGEMENTS

The authors would like to thank the following Alaska District repositories and their staffs: Technical Library; Public Affairs Office; Civil Works Project Formulation Section; and Quality Assurance Branch. A number of individuals associated with the U.S. Army Corps of Engineers assisted us in our research. Pat Richardson, Barbara Berg, Barbara Harris, and James Short proved especially helpful in locating materials from their records holdings. Diane Walters, Carolyn Rinehart, and Georgeanne Reynolds also provided valuable information. We are indebted to Ed Boothby, Erwin Long, Wendell Moore, Phil Morrow, Bill Oakes, Corinne Walker, and Aurora Loss for their willingness to share their memories of the Alaska District during formal interviews. Similarly, William C. Baldwin and Martin Reuss of the Office of History in Corps Headquarters, and William F. Willingham at the North Pacific Division offered information on research materials. Thanks are due as well to Janet McDonnell, senior historian with the U.S. Army Corps of Engineers, for her review of the manuscript. Throughout this project, we also appreciated the guidance of Colt Denfeld.

The staffs of a variety of libraries and agencies in Anchorage proved to be generous with their time as well as with their research materials. These included the National Archives and Federal Records Center, Alaska Region; University of Alaska, Archives and Alaska Room; Office of History, Elmendorf Air Force Base; Z.J. Loussac Public Library, Alaska Collection; Alaska Resources Library; U.S. Fish and Wildlife Service; and the Historical and Fine Arts Museum. Eric Marchegiani, formerly of the Alaska Power Authority, explained the activities of

ACKNOWLEDGEMENTS

his agency during a telephone interview. At the University of Alaska, Fairbanks, the Alaska and Polar Regions Department as well as Archives and Special Collections at the University of Alaska provided assistance, as did the University of Washington's Special Collections Division and the Archives and Manuscripts Division in Seattle. Terrence Cole in the Department of History, University of Alaska, Fairbanks also offered suggestions regarding our research.

For their assistance with research and editing, we are especially indebted to Daniel Gallacher, Alan Newell, Ann Hubber, Susan Mayer, Linda Naoi Goetz, and Erik Arnold of Historical Research Associates, Inc. The authors also appreciate the efforts of Frank Grant, Ph.D., who wrote much of the first draft of Chapters I – IV. A special thanks is given to Carol Conrad for supervising the layout of this history.

Lisa Mighetto
Carla Homstad

Historical Research Associates, Inc.
Seattle and Missoula
1996