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THE CIVIL RESERVE AIR FLEET PROGRAM:
THE PROBLEM OF LOST REVENUE AND MARKET SHARES

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE

by

JAMES H. RAINEY, MAJ, USAF
B.G.S. Rollins College, Winter Park, Florida, 1979

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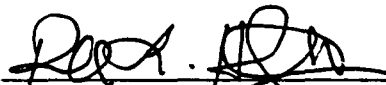
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The opinions and conclusions expressed herein are those of the student author and not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE CIVIL RESERVE AIR FLEET PROGRAM: THE PROBLEM OF LOST REVENUE AND MARKET SHARES by Maj James H. Rainey, USAF, 118 pages.

After setting on the shelf for 39 years, the first activation of the Civil Reserve Air Fleet (CRAF) program was a tremendous success. However, CRAF participants raised some significant issues such as lost revenue and government support during financial crisis that must be resolved to ensure future participation.

This study examines problems CRAF participants encountered during Operation Desert Shield/Desert Storm. This thesis looks into our past to find precedents where commercial transportation was used to meet wartime requirements. Railroads played this crucial role during World War I and World War II. A comparison of how the government solved the railroad's problems during World War I and World War II to the CRAF problem may provide a solution and ensure a viable CRAF program in the future.

The thesis concludes there are precedents the U.S. Government can use to assist the CRAF participants. To resolve lost revenue problems, the Government can develop a compensation formula like the one used during WWI. This formula would base compensation on several consecutive years of financial data instead of annual negotiations.

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This thesis is dedicated to two giant men. To my father-in-law Lt Col Elmer B. Ryckaert I thank you for your faith in me and your motivational support. But most importantly, I dedicate this thesis to the memory of a railroad man who did not know the word "quit." Even though not perfect, he was a man among men. He was a friend and fishing partner. That man was Mr. Roy Clinton Rainey, my dad.

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LIST OF ABBREVIATIONS

AMC	Air Mobility Command
ARINC	Aeronautical Radio Incorporated
ATA	Air Transport Association
CONUS	Continental United States
CRAF	Civil Reserve Air Fleet
CRAFE	CRAF Enhancement
CINCAMC	Commander In Chief Air Mobility Command
DOD	Department of Defense
DOT	Department of Transportation
FCA	Federal Control Act
ICC	Interstate Commerce Commission
LRI	Long Range International
NACA	National Air Carriers Association
NM	Nautical Miles
SRI	Short Range International
USCINTRANS	Commander in Chief United States Transportation Command
UPS	United Parcel Service
USTRANSCOM	United States Transportation Command
WASP	War Air Service Program

CHAPTER 1

INTRODUCTION

Background

The Civil Reserve Air Fleet (CRAF) program has been an integral part of this Nation's airlift capability since 1951. Over the years, the CRAF program developed into a mutual and contractual relationship between the Department of Defense (DOD) and the airline industry. The CRAF program provides nearly 50 percent of the DOD's total strategic airlift resources or, more significantly, 93 percent of Air Mobility Command's (AMC) passenger capability, 32 percent of its cargo-carrying capability, and 100 percent of its strategic aeromedical capability. No major deployment can occur without the use of CRAF aircraft.¹

Purpose

The Civil Reserve Air Fleet (CRAF) is a DOD program that uses the aircraft and support capability of the United States Civil Air Carriers to rapidly augment the organic military airlift forces during periods of increased airlift activity and national emergencies. Since requirements for airlift exceed military capability, the CRAF program was developed and provides additional airlift to reduce that

deficit. It is a very cost effective and efficient way of rapidly employing national strategic airlift resources in support of national objectives. In addition, the carriers earn revenue through routine participation in peacetime airlift contracts. It provides a means of combining commercial and military capability to meet the airlift requirements of the nation.¹

Development

The CRAF concept can be traced to President Harry S Truman. After experiencing WWII and having overseen the successful Berlin Airlift, President Truman realized the need to plan for and use civil air assets during times of crisis to augment the military. President Truman realized the military airlift assets were insufficient to handle a national emergency. To obtain these commercial assets, he would have to divert aircraft from scheduled service. This would require the establishment of a program. In 1951, he issued Executive Order 10219 directing the Department of Commerce (DOC) to formulate a plan for the use of civil airlift resources in times of crisis to meet emergency defense needs.

In 1952, a memorandum of understanding (MOU) between the Department of Commerce and Department of Defense implemented that executive order. Later, with the establishment of the Department of Transportation (DOT),

DOT took the responsibility for the aircraft allocation from the DOC. The DOT recognized that military and commercial resources are equally important and interdependent when deploying U.S. defense resources.³

Also, President Truman's Executive Order 10219 established the National Airlift Policy (NSDD 280). This policy provides the framework for the commercial carriers and military airlifters to work together as one team. The National Airlift Policy enables the United States to efficiently and effectively meet airlift requirements not only in peacetime, but also during a crisis. The current National Airlift Policy was signed by President Ronald Reagan in June 1987.

Composition

The CRAF program is made up of five different mission segments; Long Range International (LRI), Short Range International (SRI), Domestic, Alaskan and Aeromedical Evacuation Segments. Headquarters Air Mobility Command (AMC) and the civil air carriers assign aircraft to one of these segments based on the aircraft suitability (range, payload, block speed, and configuration) and national needs.⁴ (Table 1 of Appendix B shows the type aircraft and number in each segment and stage.)

Segments

Long-Range International

The LRI segment supports AMC's worldwide operations. Since this area has the greatest demand for airlift capability, it is the largest segment of the CRAF. Aircraft allocated to this segment must be capable of extended over-water operations with a productive payload and a desired range capability of 3500 NM (nautical miles). However, the historic shortage of cargo airlift dictates that all cargo-capable aircraft with at least a West Coast to Hawaii range capability or 2500 NM be accepted in the long-range fleet.⁵

Short-Range International

This segment supports the movement of short-haul cargo and passengers. It accommodates operations from the CONUS to such near offshore locations as the Caribbean, Canada, Central America, Greenland, and Iceland.⁶

Domestic

The Domestic segment supports DOD requirements that involve augmenting existing depot level cargo carriers during surges caused by an emergency. This increased airlift capability assists in moving critical (high value) cargo between depots and between depots and Air Force installations.⁷

Alaskan

The Alaskan segment satisfies requirements from 11th Air Force. This segment uses aircraft based on their availability in the area and their unique capability of performing the demanding Alaskan mission.⁸

Aeromedical Evacuation

The Aeromedical segment satisfies the shortage of aeromedical evacuation airframes required to move patients from the various theaters of operation back to the CONUS for further treatment. Furthermore, this segment provides a dedicated, flexible system for air evacuation and frees many C-141 aircraft from this mission to the resupply role.⁹

Participating Carriers

A list of the current CRAF participants is at Appendix C. Some of these carriers are large and well known, others are small and less well known. But, all carriers are in the CRAF program because they believe they have something to contribute to the defense of the United States.¹⁰

Allocation of Aircraft

The CRAF program is voluntary in Stage I and II, but not when Stage III is activated (see incremental activation on page 7). At that time, the DOT has the responsibility and authority to effectively allocate civil transportation

assets to support and maintain the National Transportation Systems during emergencies. DOT bases their allocation of aircraft to the CRAF on AMC's needs as defined by the Joint Chiefs of Staff (JCS). These JCS needs or requirements for airlift determine the size of the program. As these airlift requirements increase, air carriers volunteer their aircraft and AMC requests DOT's allocation of the assets. Also, only U.S. registered aircraft, under the control of U.S. carriers, are subject to this allocation.¹¹

Contractual Agreement

After the aircraft are allocated, AMC negotiates contracts with the carriers confirming and detailing their commitment to the CRAF. During a CRAF activation, AMC personnel in the CRAF office coordinate with contracting personnel before calling an aircraft into service based on these contracts. The contracts establish a ten-hour aircraft utilization rate; 24-48 hour in-place time (based on the stage of CRAF activation); and a 4:1 crew ratio which must not include Guard or Reserve aircrew members working for the carrier. These Guard and Reserve crew members will not be available because they are subject to an active duty call-up. Therefore, they are not available to the carrier during a CRAF activation.

Furthermore, foreign national aircrew members are precluded from this 4:1 ratio. This is because upon

activation, the Commander in Chief US Transportation Command (USCINCTrans) issues a Secret clearance to all CRAF cockpit aircrew members. By law, foreign nationals can not receive a Secret clearance.¹²

Incremental Activation

Because the nature of the airlift emergency can differ greatly, AMC maintains three different stages in the CRAF for the DOD. The ability to activate the CRAF in three different stages provides the DOD with reasonable employment options. In other words, this structure provides the capability to tailor the force to meet a specific airlift need without disrupting each carrier's commercial mission until necessary.

CRAF Stage I

CINCAMC has the authority to activate CRAF Stage I in either the cargo or passenger segment. Stage I provides support during a committed expansion of airlift capability beyond which volunteer carriers are not available to meet AMC's mission (first activation 18 August 1990). For example, during a minor contingency, commercial aircraft could replace military aircraft on routine overseas missions. This would allow AMC to use available military aircraft to support the contingency. Peacetime procedures remain in effect, as this is only an expansion of airlift

capability. Carriers must be given 24 hours between mission notification and mission execution.¹³

CRAF Stage II

This stage provides additional airlift to support DOD requirements in an airlift emergency. This stage provides an increase in capability over Stage I without resorting to full mobilization or a declaration of a national emergency. The Secretary of Defense has activation authority for this stage (first activation 17 January 1991). Carriers have 24 hours to make aircraft available upon notification. Stage II also contains the Domestic segment. The DOD uses the Domestic segment to handle the expected increase in spare parts movement between depots and bases during contingency operations.

These first two stages of the CRAF are strictly volunteer since DOT has no authority to allocate aircraft except under national emergency conditions. Therefore, as an incentive to participate in CRAF Stages I and II, those carriers who offer suitable aircraft to these stages receive priority on peacetime DOD international contracts. The DOD business that AMC offers them is proportional to the numbers, types, and capabilities of aircraft committed to these first two stages.¹⁴

CRAF Stage III

This stage is the total capability available for major military emergencies warranting full mobilization of U.S. forces. The Secretary of Defense may activate this stage after the President declares a defense-oriented national emergency, the President or Congress declares a national emergency, or in a national security situation. In this stage, all segments are available and carriers are given 48 hours between mission notification and mission execution.¹⁵ CRAF Stage III has never been activated.

Senior Lodger Concept

CRAF carriers also provide support for other CRAF carriers during Stage III operations at civil airports wherever possible. The CRAF carrier with the greatest support capability at a particular hub location is asked to be the Senior Lodger. In most cases, the CRAF carriers do not need assistance from a Senior Lodger as they transit airports worldwide. But, if they do, the Senior Lodger will coordinate enroute support and provide services as the AMC representative. The carrier providing these services receives reimbursement for all associated expenses.¹⁶

CRAF Command and Control

During any CRAF mission, the carrier retains operational control of its own aircraft. However, AMC will provide mission control by scheduling all aircraft. AMC

passes the schedule and any changes to the carriers' operations center through the ARINC system (Aeronautical Radio Incorporated). ARINC is a high speed teletype system using CRT terminals and high speed printers. The company also provides air-to-ground radio services. All carriers in the U.S., including AMC, subscribe to the system.

AMC also has access to carriers in the European theater and other parts of the world through an interconnect with similar systems such as the European SITA (Societe Internationale De Tele Communicationa Aeronautiques).¹⁷ Additionally, AMC purchased secure telephone communications called STU-3 phones for all the carrier operation centers and Senior Lodger sites. Secure facsimile machines are also available to pass scheduling information to the carriers.

Enhancement Program

By modifying commercial aircraft to accept the military cargo handling palletized system, additional oversized and bulk cargo capability can be gained. These modifications are the essence of CRAF enhancement. It is a contractual agreement between the carrier and the DOD (Table 2 of Appendix B lists the carrier enhancement and costs.) In the contract, the carrier agrees to commit the modified aircraft to the CRAF program for a stated term, usually 12-16 years.

The type modification depends on the intended use of the aircraft. Commercial wide-body aircraft conversions include freighters, convertibles, or combies (aircraft that can carry both cargo and passengers simultaneously). The program involves both new aircraft and aircraft that are now in operation but need structural strengthening to meet DOD lift requirements. For aircraft already in use, the modification/retrofit entails cutting an opening for a new or larger side loading door, strengthening the floor, and preparing the floor to accept the military 463L cargo pallets and system.

In an attempt to save money in the enhancement program, the DOD requested expansion authority from Congress in 1989. Legislation to expand the scope of the CRAF Enhancement (CRAFE) program is contained in Senate Bill S.548. Congress passed the bill and incorporated it into the 1990 National Defense Authorization Act.¹⁸

This new legislation gives the Air Force authority to negotiate with carriers to incorporate the enhancement features while the airframe is in initial production. The Air Force pursues this program to ensure military cargo handling features are incorporated into selected long-range cargo aircraft (provided funding is available). The Air Force also participates (provided funding is available) in incorporating necessary secure communications and navigational equipment in passenger and cargo aircraft to

improve their interoperability with the military airlift system.

Bargain Cost

This additional cargo capability available to AMC in the CRAF program is at a bargain cost. The Government saves money by not having to buy the aircraft, pay for the logistics support, or maintain a crew force. At the 10 October 1990 House testimony before the Investigations and Oversight Subcommittee of the Public Works and Transportation Committee, Mr. Bob Moore from the Office Assistant Secretary of Defense for Production and Logistics said, "It would cost the DOD over \$10 billion to replace the commercial cargo capability with military aircraft, not including aircrews or annual operating costs." ¹⁹

Aeromedical Program

The DOD is required to provide intertheater aeromedical evacuation in support of and in addition to military aeromedical evacuation in time of national emergencies. The CRAF Aeromedical concept calls for dedicating B-767s to intertheater aeromedical evacuation and using MD-80s for CONUS patient distribution. This segment provides increased aeromedical capability to support present wartime requirements (CRAF Stage III).

The Air Force has procured aeromedical ship-sets consisting of litter stanchions that fit into passenger seat

tracks, a liquid oxygen system, an electrical distribution system, and a nurses' work station. This equipment is modular and installed just prior to the emergency airlift. No permanent or prior modification of either the B-767 or MD-80 is required.²⁰

Contingency Planning

The CRAF is an important asset in airlift contingencies. AMC and CRAF share the responsibility for contingency airlift that combines speed and flexibility to get forces into a theater of operations in time to make a difference. These responsibilities are outlined in the National Airlift Policy. From these, military airlift planners assume that commercial carriers provide the bulk of passenger airlift (95 percent) and contribute a significant cargo capability (32 percent) during the first 30 days of a contingency operation. Planners take advantage of the complementary capabilities of CRAF and military airlift. That is CRAF passenger aircraft can carry larger numbers of troops while CRAF cargo aircraft can carry palletized cargo. Military airlifters have an advantage in hauling heavy outsized military cargo and roll-on/roll-off vehicles for rapid delivery to unimproved airfields.²¹ All this augmented capability, while good, carries a hidden cost to the CRAF participant in the form of lost revenue and market share when activated.

Assumptions

That the Congress and DOD will hold future levels of military cargo aircraft at or near the current levels. If the levels were to drop, the CRAF program becomes even more attractive and important.

Limitations

I limited my research to WWI and WWII because of the shorter build up and draw down period for the United States. I did not include Viet Nam because it had a gradual built up and draw down period. This is important because the shorter the drawdown time, the more effect it had on peacetime conversion.

Delimitations

Delimitations are those constraints and restrictions imposed on this thesis by the author.

The efforts of this thesis analysis will be limited to reviewing the rail industry during World War I and World War II in part due to lack of specific data prior to WWI. Also, during WWI and WWII the railroads played the largest role of all commercial carriers similar to the role CRAF played as the critical commercial carrier (excluding ships) during Desert Shield/Desert Storm.

Specific Research Question

A need exists to answer the question of how the CRAF participants can expect to be compensated when market shares are lost because of CRAF activation. In light of recent experiences, carrier participation may hinge on this and other answers to problems they experienced during the first call up. The question for research: Are there precedents established by the U.S. Government in dealing with other common carriers during war that can help resolve the problem of CRAF lost revenue and market shares? The research strategy is to examine the situation of railroads prior to entering WWI and WWII, look at what problems arose from participation in the wars, and determine what the Government did or did not do to resolve problems regarding lost market revenues shares or. If there are established precedents, can they be applied to the CRAF?

Scope

This research focuses on finding ways to solve the problems of the CRAF losing revenues and market shares under activation. By researching prior wars, the answer to how the Government resolved previous problems should help. The CRAF program of the future could hinge on how the government responds to their loss of revenue and market shares.

CHAPTER 2

REVIEW OF LITERATURE

Accomplishing a detailed review of literature for this thesis achieves two purposes. First and foremost, it allows the reader to become familiar with material available on the railroads during World War I and II and the Civil Reserve Air Fleet program. Second, it provides any follow-on researcher with a short synopsis of the variety of information relating to the topic.

The review of literature for this thesis consists of books, government publications, journals, articles, and interviews. The information from these sources was examined, compared, and contrasted to determine relevancy to the topic.

The material was gathered from a variety of different locations. The Combined Arms Research (CARL) Library at the United States Army Command and General Staff College (CGSC) was my primary source for documentation. The Ft. Leavenworth Staff Judge Advocate Office provided valuable assistance in researching a federal court case that was unavailable at CARL and the CGSC. The Pentagon Law Library also provided assistance in researching a federal court case

not available at Ft. Leavenworth Staff Judge Advocate Office, the CARL, or the CGSC.

The following are brief reviews of a few of the significant reference materials.

Books

Civilian War Transport edited by Otto Praeger. This is an excellent historical book written from the standpoint of transportation problems and how they were met during World War II. It was drafted from the files, records and supervisor interviews of the Office of Defense Transportation. The book does a superb job of explaining how the Office of Defense Transportation functioned during the war. Chapters 1, 2, 8, 31, 38, 39, and 42 were extremely helpful.

In Walker D. Hines' book, War History of American Railroads, he showed that the railroad activity during and after WWI were intertwined with the country's industry, labor, commerce, and finance, so that the railroads constituted a vital part of economic influence on the nation. This book is one of the key publications this thesis incorporates.

Edward Hungerford in his book, Transport for War, captured the ever-changing subject of transportation during war from 1942-1943. His book compares the capabilities and

differences between WWI and WWII. This book, even though it does not cover WWII completely, is recommended for use as background information for any further study which includes railroads.

Railroad Transportation and Public Policy by James C. Nelson discusses the basic factors in the railroad problem and steps toward a solution. Though he covers the railroads from the early 1920's, he concentrates most of his discussion on the early and mid-1950's. He has assembled a tremendous amount of data in graphs, charts, and tables in his analysis. This book was a valuable asset in preparing this thesis.

In his book, American Wartime Transportation, Joseph R. Rose studied the problems encountered in all domestic transportation during WWII and their solutions by the different transport agencies. Chapters 1, 2, 3, and 13 were most valuable.

Government Publications

Testimony from the United States House of Representatives, Subcommittee on Public Works And Transportation, Civil Reserve Air Fleet (CRAF), 101st Congress, 2nd session shows the concern for the CRAF participants during the Desert Shield/Desert Storm

activation. This testimony brought to record the problems facing the air carriers in the CRAF.

The Federal Court case *Farmers Grain Co. et al. v. Toledo, Peoria & Western Railroad et al.*, Federal Supplement 66, was instrumental in bringing to light how problems arise between railroad management and unions under duress. This case study was worth the search and is must read material for railroad enthusiasts doing further research.

Journals

"What About the Railroads?" by John J. Pelley in Army Transportation Journal April 1945. Mr. Pelley, President of the American Association of Railroads, brings up the point that the basic problems that face the American railroads after WWII are similar to those confronting them after WWI. He looks forward and offers some ideas of what may be done to solve the post-war problems. Some of these ideas are discussed in Chapter 4 of this thesis.

"What about Tomorrow?" by DR. Hampton K. Snell in Army Transport Journal February 1945. Dr. Snell tells how things in the transportation world are changing. With the air industry literally taking off and trucking expanding as highways improve, he believes that the railroads seem destined to lose market share unless management abolishes their defensive attitude and improve management practices.

This article shares insight on the changing transportation world during 1945.

"Rail Transport" by G.C. Randall in Army Transport Journal August 1945. Mr. Randall, Manager, Port Traffic Section Association of American Railroads, tells why there were no major tie ups at the ports during WWII. He discusses the tremendous work-together relationships between shipper, carrier, and port handlers and how they made it happen. See Chapter 4 of this thesis.

Articles

Mr. Paul D. Tuck in his Society of Automotive Engineers Technical Papers Lessons Learned During Desert Shield/ Storm Through Activation of the CRAF in April 1992 wrote an abstract covering some of the technical aspects of the CRAF program plus some lessons learned during the Gulf War. Mr. Tuck is a respected expert, analyst and consultant in the field of air transportation, aircraft loading equipment, and aircraft pallets. His reputation is known throughout the world and anyone doing research in the air transportation field should read his technical papers.

"Shrinking Incentives for Airlines Pose Problems for CRAF Program" by the Military Airlift Command in Aviation Week and Space Technology September 9, 1991. This article discusses the move in the DOD toward smaller, lighter forces and the resulting decline in up to 69% of the current

peacetime business offered to commercial airlines. It is a realistic look at problems facing the CRAF program in the future.

"U.S. Carriers Want Changes In Military Airlift Program" by James Ott in Aviation Week & Space Technology October 15, 1990. This article discusses the testimony before the United States House of Representatives, Subcommittee on Public Works And Transportation, Civil Reserve Air Fleet (CRAF), 101st Congress, 2nd session. This article brings out the meat of the testimony and shows the dedication of the CRAF during the recent activation and brings out some of the carriers concerns.

Interviews

The author of this thesis interviewed Colonel Ron Priddy, USAF, on several occasions from August 1990 until Col Priddy's retirement in June 1992. Col Priddy was the CRAF program manager at Headquarters Military Airlift Command (MAC), Scott Air Force Base, Illinois. Col Priddy devoted his all to the CRAF program and was one of its staunch supporters at MAC and in Washington D.C. Any research into the CRAF program would be incomplete without a visit with Col Priddy.

The author of this thesis conducted a telephone interview with Mr. Greg Treitz, CRAF Mobilization Representative for United Parcel Service (UPS) on

April 22, 1993. Their conversation verified that UPS did in fact place claims with HQ MAC for reimbursement for lost revenue in lieu of lost market shares. More details are divulged in chapter 4.

The literature review above was essential to the research and writing of this thesis. In formulating this thesis, a variety of additional material was used to supplement the literature in this chapter. It is referenced in the bibliography.

CHAPTER 3

RESEARCH METHODOLOGY

The methodology used in accomplishing the research for this thesis is a review of historical information. The nucleus of my research on railroads came from the many reference books described in Chapter 2 and others listed in the bibliography. This core data served as the foundation to my establishing an understanding of the problems the railroads encountered prior to, during, and after WWI and WWII and how these problems were resolved.

In addition to these books, I studied the writings available in other reference books, monograms, defense journals, and personal interviews on both the railroads and the Civil Reserve Air Fleet (CRAF) program. In Chapter 4, the analysis chapter, you will find the results of my research into the question: Are there precedents established by the U.S. Government in dealing with other common carriers during war that can help resolve the problem of CRAF lost revenues and market shares? Here, you will find the answers to my primary and secondary questions as a comparison to determine what problems were common to the railroads in WWI, WWII, and the CRAF at the end of the

Persian Gulf War. The information compiled from this research effectively answered my research question.

In Chapter 5, I provide recommendations and conclusions based on the comparison in Chapter 4.

CHAPTER 4

ANALYSIS

This chapter contains the analysis of the railroads during World War I and World War II. It includes a check on the condition and position of the railroads. It explores the major problems related to operations between the U.S. Government and the American railroads, such as why the Government used them and issues such as lost revenue and market share. This chapter also includes analysis of the CRAF program during its only activation and what problems arose, specifically lost revenue and market share.

World War I

Prior to the War

Overview

In the years prior to the war, the railroads were privately owned and operated. There were several hundred railroad companies operating during this period with about 77 percent of the total mileage of rail being operated by only thirty-two rail systems. The business climate among these different systems was one of intense competitiveness and very little government intervention. That was the case

until 1887 when the Interstate Commerce Act prohibited pooling of assets to stabilize rates.¹

Mr. Walker Hines, former Director General of the Railroad Administration during WWI, made the following statement about competition and pooling:

The Anti-Trust Act of 1890, as interpreted by the Supreme court in the Trans-Missouri Freight Association and Joint Traffic Associations Cases had prohibited mergers of competing lines or agreements among them to stabilize rates. It was the policy of the law to encourage competition to the fullest possible extent, and to discourage all forms of cooperation tending to diminish competition.²

One of the major reasons for pooling was that the American railroads were built in advance of the development of their traffic. At the outset, they were constructed to a large extent in a relatively inexpensive and less substantial way than they would have been if the traffic had already been developed before their coming. As a result, the railroads were under the continual demand for additional construction and expansion. This construction was needed to enlarge their capacity and provide main tracks, lengthen sidings, enlarge terminal yards, increase shop capacity, and equip themselves with larger cars and locomotives.³

Also, because the country was growing so rapidly, there was a continual need for additional railroad growth. This growth could only be satisfied by raising larger amounts of new capital each year.

While this need for new funding was paramount to the railroads, other factors were simultaneously at work. One of these factors was the intense competition that caused the average revenue per ton mile to fall and cut deeply into the profits needed for growth. However, the railroads survived because of the rapidly increasing volume of business. This increase enabled them to increase the train load and reduce the cost per ton mile. However, Mr. Hines wrote that this increase was not enough to handle all the funding problems:⁴

But, by 1917, the railroads were approaching a critical condition because (a) the margin of opportunity for still further increasing the train load was apparently narrowing; (b) the cost of labor, material and public taxes had been rising with great rapidity since the latter part of 1915 (the increase in wages and taxes had begun several years earlier), and (c) governmental regulation had become increasingly restrictive in its operation.⁵

Another factor was the attempt by the states and federal government to control and regulate the railroads in the interest of the public. As the states began to lower rates on interstate traffic, the railroads filed suit. The case reached the Supreme Court of the United States and in 1887 the court held that state laws could not regulate interstate rates.

However, in 1906, Congress conferred onto the Interstate Commerce Commission (ICC) the power to prescribe maximum carriage rates for passengers and freight. Not long

after, the states adopted these same rules and formed Public Utility and Railroad Commissions. These commissions operated on the principle that their sole concern was to see that the railroads did not take advantage of the public. Therefore, there was little concern by state commissions to see that rates were high enough to encourage development of transportation systems. Thus, the commissions resolved all doubts in favor of reducing rates and against increases even if they were necessary in some cases for public safety. These government actions added to the railroads expenses without providing adequate relief.⁶

Another factor working against the railroads was increasing labor costs and strikes. To avert a strike of the train service men in 1916, Congress passed the Adamson Act establishing an eight-hour workday for freight train crews. This act caused a substantial increase in the outlay for wages because railroads had to hire more workers. This outlay, plus other funding factors, kept eroding the capital pool of the railroads even as they were continually requesting rate increases. However, their efforts to get the ICC to increase rates was disappointing at best.⁷

Even though some increases were allowed by the ICC, they were not high enough to keep abreast of the tremendous demand placed on the railroads. Because railroads were not able to invest adequate capital to handle the heavy volume

of traffic offered in the busy seasons, their situation became unsatisfactory. This in turn caused heavy congestion and was a serious problem. For several years, the railroad executives sought relief for this situation through the Congress, the President and the public.

The railroad executives were also reluctant to spend the funds to bring facilities and systems up to par to support the war. Most executives were afraid this increase in war traffic would not be sustained after the war and could even drop. This would cause the spending of millions of dollars with no hope of recouping the investment.

As a result, on December 7, 1915, President Wilson recommended a general inquiry to conduct an investigation into the operation and management of rail transportation. The following is an excerpt from his message:⁸

In the meantime may I make this suggestion? The transportation problem is an exceedingly serious and pressing one in this country. There has from time to time of late been reason to fear that our railroads would not much longer be able to cope with it successfully, as at present equipped and coordinated. I suggest that it would be wise to provide a commission of inquiry to ascertain by a thorough canvass of the whole question whether our laws as at present framed and administered are as serviceable as they might be in the solution of the problem . . . the question is not what we should do? It is whether there is anything else we can do that would supply us with effective means, in the very process of regulation, for bettering the conditions under which the railroads are operated and for making them⁹ more useful servants of the country as a whole.

President Wilson's main effort was to gain voluntary cooperation for the effort as soon as possible. This was thought to be achievable by forming a committee of the executives from the five largest railroads as members of the Railroads' War Board. However, these efforts toward unification did not work since the railroads were interested in what was best for their railroad and not the war effort. Mr. Hines provides these comments about guarantees the railroads wanted to join this unified effort:

No form of guaranty was provided by the government to protect any railroad company against any loss it might sustain as a result of low rates or high costs or as an incident to being put at a disadvantage in the process of unification through diversion of its traffic or car supply or transfer of its locomotives for the benefit of other lines.¹⁰

But it was not until July 20, that the House and Senate adopted a joint resolution forming a committee to conduct this inquiry on the matter of transportation. The commission met regularly and held extensive hearings for more than a year. However, because of the war in Europe, the Government could not wait for the commission results to improve the state of transportation in the U.S. This was similar to why the CRAF program was developed in 1951 to resolve a transportation need. On December 27, 1917, the President issued the order to take possession of the railroads.¹¹

The Take Over

The take over was inevitable. Conditions such as the threat of a major labor union strike over better working conditions and higher salaries and a lack of expansion and improvements in facilities necessitated the possession. Also, the railroads were required to handle ever increasing volumes of business but were unable to develop the capacity to handle it. All these unfavorable influences converged on the railroads producing a situation where the Government had to step in and manage the railroad assets so crucial to execution of the war.¹²

During the War

Overview

The Railroads' War Board failed to create the vast amounts of fresh capital necessary to successfully prosecute the war effort.¹³ Thus on January 1, 1918, the U.S. Government placed control of the railroads under the Railroad Administration. Thus, the Director General operated them until the Armistice and for sixteen months thereafter, pending the adoption by Congress of an improved system of railroad regulation.

The Government wanted signed contracts to alleviate problems and define terms of the take over. But, the railroads had several problems they wanted resolved prior to approving contracts. These problems included compensation,

claims for diversion of traffic, corporate salaries and other expenses, maintenance, and claims for under-maintenance. These were eventually worked out and the contracts signed. However, port congestion and inadequate control of shipments to ports caused more problems. These were, over time, managed by federal control. The solutions to those and all associated problems cost money which the Government and ultimately the tax payers paid.

The government's management scheme was to compensate the owning corporations for using their properties with proper maintenance performed or accounted for. These properties placed under federal control totaled 532 companies with total trackage of more than 366,197 miles and an estimated book value of over \$18,000,000,000. Because of the high value of properties and possible liabilities, the Government drew up contracts in the best interest of all concerned to define the rights and obligations of both parties. The President received his authority to issue these contracts from the Federal Control Act (FCA) of March 21, 1918.¹⁴

In the first year of federal control, the actual increase in ton-miles handled was less than three per cent over 1917 figures. But, to gain the three percent increase in traffic, the Railroad Administration raised railroad operation costs by fifty percent. In 1919, the ton-miles

handled actually dropped back to the 1916 figures. But, handling costs rose eighty-three percent higher than in 1916. It was clear that the politicians (Railroad Administration) were responsible for the tremendous increases by adding over 18,000 men and women to the railroads payroll. As Edward Hungerford, author and executive of New York Central Lines, put it, "the fat was in the fire. So was Old Man Railroad."¹⁵

Contract Problems

Compensation

The Federal Control Act (FCA) authorized the annual payment of compensation not to exceed the carrier's annual operating income for the three-year period ending June 30, 1917. Although many railroads profited from this compensation plan, some did not. Several of these carriers filed for additional compensation because of exceptional conditions during the test period which were not taken into account. All the claims were eventually settled through negotiated agreements with the Director General and did not go to court. In total, the Government paid compensation in the sum of \$2,036,400,000 during the period of federal control.¹⁶

Part of the reason the Government paid the additional compensation was even though the railroads handled an increase of 8.8 percent in revenue ton-miles and 14.1

percent in passenger-miles in 1917 over 1916, earnings only increased by 11.6 percent. However, operating expenses increased 20 percent and taxes rose by 36.2 percent. These increases resulted in an unhappy situation for railroad owners and shareholders. But, this was not all the bad news for owners and stockholders. Many skilled workers left their shops and either enlisted or went to work in factories because wages and working conditions were better.¹⁷

Claims for Diversion of Traffic

The carriers offered strong opposition and sought relief from contract language releasing the Government from any claims for damage because of the diversion of traffic or business in consideration of compensation paid. However, the carriers lost their bid to change the contract and the provision was retained. In his reply to the carriers, the Director General held that any right on the part of carriers to such claims was unreasonable. Also, the FCA held that the compensation established in the contract covered all damages and that the Director General had no authority to recognize the right of carriers to claim these additional charges.¹⁸

Corporate Salaries and Other Expenses

The Director General ruled that the Government would neither pay the salaries of the officers nor the expenses of

the many offices that remained under the corporations control. The carriers countered, insisting they were entitled to reimbursements of more than \$17,368,858 in officer's salaries and corporate office expenses. However, the Director General rebutted and declined to adopt the carrier's view. He insisted it was not equitable for the Government to pay those expenses occurred during Federal Control solely for the benefit of the corporation.¹⁹

Maintenance and Over-Maintenance

The railroad companies wanted to put a provision in the contract making the Government liable for maintenance based on the physical condition of the property at the beginning of federal control. Instead, the Government insisted the accounting method used for compensation during the test period also be used for maintenance. This method used the average annual cost of maintenance during the three-year test period as the standard or level of maintenance required. The Director General chose to employ the accounting method under the test period for maintaining the railroads.

The railroads also sought an allowance for the difference in costs of materials and labor expressed in a way so railroads could claim that lower efficiency of labor, as well as higher wages of labor should be considered for

reimbursement. But, the Government refused to concede this claim to the railroads.²⁰

The carriers strongly objected to the contract language authorizing the Director General to charge carriers for expenditures resulting from putting the property in better condition than it was at the beginning of Federal Control. The Director General concluded that the carrier would pay the expense if the property was not in a safe condition for operation. The carriers lost and the Government retained the provision in the contract.²¹

Claims for Under-Maintenance

The railroads presented a total claim for \$678,000,000 for under-maintenance of their properties during federal control. These claims were settled by the Director General on a case by case basis in the amount of \$203,000,000. Overall, the Government expended over \$4,075,000,000 for maintenance of way and structures and equipment during federal control. Even with the claims, on average, the Railroad Administration maintained the railroad properties in a condition that was very close to that required by the contracts despite severe shortages of essential materials. Many railroad executives and newspapers started the rumor that the railroad properties were in a broken-down condition at the end of federal

control. However, this rumor had no foundation and has been clearly disproved.²²

Congestion

One reason the Government took control of the railroads was because shippers demanded far more from the railroads than they had capacity to provide. Commercial business competed with military shipments. The ability of the railroads to expand quickly under such circumstances and shortages of resources was limited. Before federal control, far more freight was shipped to the eastern seaports than the port authority had ocean vessels to transport it. Also, the Government required the shipper to give priority of shipment to their freight without any consideration of the already congested ports. The government priority movement system plus the port bottlenecks resulted in a severe rail car shortage. The port authority used the cars as storage units at the ports rather than unloading them and putting them back into the system.²³ After the Government took control, these problems improved dramatically.

Achievements

Under federal control of the Railroad Administration, two outstanding accomplishments were achieved that had not been possible under voluntary control with the War Board. They were (1) the control of shipments and traffic to

prevent the clogging of terminals and wasting equipment and facilities and (2) unified direction of the handling and maintenance of equipment and other facilities. Control and direction of this magnitude could only be done with the strict control and authority given under federal control.

Under federal control and its guaranteed compensation, the railroads could get the capital needed to buy materials and make essential improvements. They could also obtain the money necessary for wages and other operating expenses even if railroad revenues were insufficient. Obtaining federal funding such as this could only be achieved because the railroads under federal control were removed from the Anti-trust Act and the scrutiny of the Justice Department.²⁴

Cost of Federal Control

But, regardless of the success these achievements obtained, they came at a high cost. Analysis of the railroad operating cost during federal control and during a corresponding test period shows an increase of 83 percent. Payment of this increase was borne by the public either through increased freight and passenger cost (when available) or through the public treasury (increased taxes). The net cost to the public treasury of federal control stood at \$1,123,500,000 on December 31, 1924.²⁵

After the War

Overview

When the railroads went back to private control, they found themselves involved in resolving several major issues. These issues included the transfer of properties, new legislation, improvements, and post-war operations.

The government control over the railroads from January 1, 1918 to March 1, 1920 was a method of mobilizing this part of the country's capital and enterprise for war purposes. It was very much similar to the great portion of the country's manpower mobilized for military service, with restricted compensation and loss of freedom of action.²⁶

Mr. Walker D. Hines, former Director General, wrote the following about the economic conduct of war:

In proportion as the government sensed the imminence of a national crisis, when success or failure depended upon the concentration of energy and upon the mobilization of every available resource, there was no holding back the extension of government control over the whole field of industry and economic activity. This was the almost universal lesson of the economic history of the War, as these volumes bear witness. It, therefore, seems reasonable to assume that if war should ever come again that lesson would continue to be applied, here as elsewhere, with increasing force, with the result that there would be far less, instead of more, stimulus to industry for private profit than in the past.²⁷

Transfer of Properties

At 12:01 a.m. on March 1, 1920, the transfer of control of the railroads from federal control to the owning

corporations occurred. However, the railroads were concerned with intrastate rates at the end of federal control. They feared states would start reducing the rates. Therefore, the Transportation Act established that the current rates would not be reduced until September 1, 1920 or until changed by federal or state authority (approved by ICC).²⁸ Also, Congress was working on reform legislation and needed this extra time to complete it as the President did not want to release the railroads to the free enterprise system of competition until these laws were enacted.

Operating costs during this guarantee period rose due, in part, to increased wages and an extensive unauthorized strike of switchmen that seriously hampered the conduct of operations. At the end of the six months, the total cost to the treasury was \$530,468,000. Again, the public treasury bore the cost.²⁹

New Legislative Policies

Before the war, many Americans believed in the general concept that more competition among the many railroads was good for the public interest. However, under the Transportation Act of 1920, the Government viewed this concept as a disadvantage. The Government believed the number of railroads must be limited and controlled for the good of the public. Therefore, new legislation required all

railroads to apply to the ICC for certificate of operation.³⁰

Post-War Improvements

After gaining control of their railroads, executives improved their operating conditions which was an impossibility during federal control. Indeed, they realized greater efficiency after the war than in the pre-war period. They came to a more complete and cordial understanding with the public and with employees. Also, the railroads rendered more expeditious, reliable and convenient service than they had before the War.³¹

Post-War Operation

Several major problems required solutions as the railroads resumed responsibility for their properties. One of these problems was lengthy labor negotiations and disputes. The Labor Board did not help matters to any significant degree by striking down most of the rules that the Railroad Administration had established and in 1921 it sanctioned substantial reductions in wages. These actions had the rank and file employees up in arms. To curb the strikes, some railroads made adjustments with the shopcrafts' unions thus providing the recognition so many of these unions sought. But, not all railroads negotiated with the unrecognized unions.³²

One of the more acute problems facing the railroads was the revenue situation. Along with the wage readjustments and serious unauthorized strikes that caused tremendous traffic congestion, the railroads encountered a sudden slump in business in 1921.³³

But even with this slump, the railroad companies raised and expended nearly \$3,600,000,000 from 1921 to 1926 for betterment of their properties, labor saving machinery and devices, and greater efficiency. This was needed because federal control had adopted a policy of virtually marking time concerning improvements, a thing detrimental to any enterprise. As a result of these expenditures, car shortages during the busy season almost disappeared and promptness and reliability of railroad transportation were far greater than ever before.³⁴

Of the relationship between the federal control of railroads and wars, Walker Hines wrote:

Our Government's war control of the railroads was not an isolated episode but was merely one of many illustrations, here and abroad, of the governmental overriding of private initiative in most of the important fields of business, and was simply an especially striking instance of the mobilization of corporate enterprise for war purposes, a condition which seems to be inevitable when modern war so completely involves all the social and economic resources of civilization.³⁵

How Were Problems Resolved?

Problem

Lost Revenue.

Solution

The FCA authorized the payment of compensation annually of an amount not to exceed the carrier's annual operating income for the three year period ending June 30, 1917. This compensation formula actually helped some struggling railroads and hurt those making a profit.

The formula did not take into account any increase in revenues above the formula compensation. Those carriers hurt by this formula filed for additional compensation because of the exceptional conditions during the test period. The Director General representing the President of the United States arbitrated all the additional compensation claims which the railroads accepted.³⁶

Problem

New capital for growth.

Solution

After the war, railroads raised and expended nearly \$3,600,000,000 from 1921 to 1926 for betterment of their properties, labor saving machinery and devices, and greater efficiency. The railroads had to raise their own investment monies because federal control had virtually adopted a

policy of marking time and not made necessary improvements.³⁷

Problem

Increasing labor and material cost and taxes.

Solution

There was no relief for the increase in labor and material cost or taxes during the war. Also, because of a sudden slump in business in 1921, the railroads petitioned the Government for relief because net railroad operating income was extremely low. This resulted in the Labor Board sanctioning reductions in wages. However, this wage reduction alone was not enough to help stimulate business and late in 1921 the western railroads reduced their rates by 10 percent in an attempt to gain volume business. The ICC picked up on this idea and forced all railroads to reduce their rates by 10 percent in attempts to stimulate the U.S. economy and railroad revenues. However, for the next two years the railroads suffered through the post war slump with no further assistance from the Government.³⁸

Problem

Increasing government regulation.

Solution

During the war, there was no solution to the ever increasing government regulation of railroads in the interest of the public welfare. Government involvement continued as workers and unions sought to obtain more and more concessions from the railroads. The regulation and control would not cease.³⁹

Summary

The experience of the railroads in WWI provides precedents that are relative to the CRAF program. These precedents were the need for transportation assistance to prosecute the war and the problems associated with exclusive government business (e.g., lost revenues). The possession of the railroads during WWI did not result in any real or new growth in the industry. The improvements made in efficiencies were accomplished by the railroads after the war. The Government acted like a caretaker and not like a business trying to make a profit for its shareholders. This was because the Government was not in the habit of making a profit and by law could not make a profit.

At the same time, the railroads did not fare well in challenging contract language detrimental to their cause. Inevitably, the Government won almost every one of the disputes. However, some payments were made for revenue lost due to exceptional conditions not taken into account by the

Government, claims for diversion of cargo, and lack of maintenance performed.

The achievements of the Railroad Administration were very costly. For example, the three percent increase in traffic moved raised the operating costs by 50 percent. The total cost to taxpayers for this control was over \$1,123,5000,000.

The Government left the railroads with several major problems to resolve at the end of control. Among these problems were labor disputes and lower revenues; conditions most railroad executives predicted prior to the war. The Government also refused to grant increases in rates to alleviate the wage increase problem and the slump in business. Federal control of the railroads indicated just how deeply committed our Government was in mobilizing this nation's resources to support the war.

World War II

Prior to the War

Prior to the war, there were several initiatives from the President of the United States and the railroads to place themselves in a better position in the event of another war. These included voluntary meetings of executives, recommendations to the War Department, and establishment of the Office of Defense Transportation (ODT).

In the years after WWI, the President of the United States called the American railroad executives together to advise him of their plan and capability to privately handle another national emergency. From these meetings came the creation of the Office of Defense Transportation (ODT) with the authority to approve relief to meet unusual and additional demands of the Government at war. The railroad executives also worked with the Army and Navy to develop a program for effective traffic control in the event of another war. This program incorporated the issuance of permits to move traffic. The ODT named the Association of American Railroads as the agent for issuance of these permits. The rule they used in controlling traffic to the ports was, "a car shall not be loaded until it is definitely known that it can be unloaded at the port".⁴⁰ At their meetings, the railroad executives made recommendations to not use railroad cars as storage facilities. Instead, they recommended using warehouses located along the rail system and a hundred miles or less from the ports which would be leased and used to store excess freight. This would not only free up railcars but let war freight be moved quickly to any seaport along the rail system.⁴¹

It was also recommended that, in the event of war, a higher rate structure be implemented as the costs of

operations increased. This recommendation was followed at first during the war, but was later nullified.⁴²

In the dozen years following WWI, the railroads spent several billions of dollars in an attempt to improve the roadbed, track, and terminal facilities.⁴³ However, the railroads found themselves entering their wartime task with a scarcity of equipment. This was due chiefly to the loss of traffic after WWI. This situation caused the scale of the entire railroad plant to contract markedly between the two wars. Thus, trackage, locomotives, and freight and passenger cars, all declined at least quantitatively.⁴⁴

On December 18, 1941, the Office of Defense Transport (ODT) was established by Executive Order Number 8989. The purpose of ODT was "to assure maximum utilization of the domestic transportation facilities of the Nation for the successful prosecution of the war."⁴⁵

During the War

Although the Government did not take possession of all the railroads, several did require the ODT to manage their companies throughout the war. One of the ODT's main responsibilities was to secure transportation equipment considered necessary to wage successful war. As ODT continued to request these assets from the commercial market/industry, "the result was that while the war load

increased. the relative supply of transportation equipment decreased."⁴⁶

During WWI, congestion at ports and terminals was the rule, with few exceptions. However, during WWII, congestion was not a problem at the ports or the inland terminals. Rail congestion on tracks leading to the eastern seaports was completely prevented by the export permit system. Also helping the situation in the East was the routing of freight traffic west of the Mississippi to southern and western seaports.⁴⁷

Despite the heavy burdens placed on the railroads by war, many achievements were accomplished without government subsidy. The railroads did, however, receive tax assistance on some equipment and modernization efforts required by the Government to prosecute the war. Even though the railroads were managed by their owning corporation, several railroads were taken over by the Government because of unreconcilable disputes between management and unions.

The heavy war burden on railroad transportation was much more than a matter of simply carrying military personnel and the material of war. The railroads were burdened with the extra cargo and petroleum previously carried by coastal shipping. This interruption was the result of perceived threat of having tankers sunk by enemy submarines positioned off U.S. East coast. Also, bumper

crops of wheat and other grains generated a constant demand for more box cars than could be supplied.⁴⁸

By looking at railroad capital expenditures for additions and betterment of roadway and structures, we are furnished with some indication of the condition of railway plants when the railroads assumed their wartime operations. Expenditures for roadways and structures were \$2,525,133,000 during 1926-1930, \$724,214,000 during 1936-1940, and \$1,039,359,000 during the war years 1941-45. The shrinkage in capital expenditures during the prewar period suggests that railway plants were not maintained in accordance with pre-depression standards.⁴⁹

Rail shipments supporting the war brought more traffic than the railroads could possibly handle. The main reason for this was that the railroads were already operating at peak capacity and all available railcars were under lease or contract. Thus, the railroads had to meet this insatiable wartime demand with the same assets available in peacetime.⁵⁰

As in the last war, railroads could not get all the new equipment or all the rail gangs, engineers, and agents they needed to handle the traffic (almost all the men went to war). Neither could they get all the materials like steel, aluminum, and rubber they needed for new rails, passenger cars, and freight cars because the Government

funneled all those resources to produce tanks, guns, and airplanes for war. Their plants were undergoing the longest and heaviest wear and tear in their experience. The Interstate Commerce Commission estimated that the accumulation of deferred maintenance of railroad property through April 1945 amounted to approximately \$300,000,000.⁵¹

This meant of course, that there would be a problem of rehabilitation for the railroads after the war, just as there was after WWI. Not only would there be a great need to "catch up," but there would be a need for new and better equipment, especially passenger equipment of the newer designs. Such a program of plant modernization would prove to be a real contribution in keeping up production and employment levels during the first few years after hostilities, provided the financial position of the railroads would permit the huge expenditures required.⁵²

Even though the capital expenditures had decreased between the wars, daily movement of troops and materials just about doubled that of WWI. It was accomplished with about one-third less equipment and none of the congestion and prolonged delays that plagued the country during WWI.⁵³

Achievements Without Subsidy

The task of moving the men and material needed to prosecute WWII was accomplished without any increases in

tariff rates during the war period. Any additional plants or equipment needed was paid for from railroad funds without assistance from the ICC or state public utility commissions. By comparison, in WWI the Railroad Administration spent nearly \$2,000,000 a day operating the railroads. However, just the opposite happened during WWII as the railroads paid taxes amounting to about \$5,000,000 a day to the Treasury of the United States.⁵⁴

With subsidies during WWI, the railroads invested about \$10,000 per worker in plant and equipment. During WWII, the investment per worker was \$18,000. There were several results from this increased investment. First, worker efficiency increased because of new and improved equipment. Second, workers received wages at almost twice the average of their WWI counterparts. Third, the public received adequate and dependable transportation during this war.⁵⁵

Because these investments improved the efficiency of railroad operations, this war load was accomplished with some 600,000 fewer freight cars, 16,000 fewer passenger cars, and 32,000 fewer locomotives than in WWI. Also, the average number of railroad employees was 500,000 fewer than in WWI. The railroads were proud of their achievement of carrying 294,000,000 tons or 90 percent of military freight

and 33,500,000 or 98 percent of the military passengers to the ports during the war.⁵⁶

A comparison of the magnitude of railroad output is in order and it's measured in revenue ton-miles (formula measuring the number of miles required to move one ton one mile). Railroads contributed over 367,000,000,000 ton-miles in 1916 and 408,778,061,000 ton-miles in 1918 as compared to 734,829,000,000 ton-miles in 1943 and 690,809,000,000 ton-miles in 1945.⁵⁷ This equates to about half again as many ton-miles moved during WWII with fewer men, locomotives, and personnel. However, these efficiencies and outstanding results could not be achieved without some relief or assistance from the Government.

Tax Amortization

One of the major problems facing the railroads was the possibility that conversions and expansions undertaken for defense purposes might not be kept in operation long enough to repay their cost, given the usual rate of amortization. Also, the revenue laws were harsh on facility costs in computing income for tax purposes. The railroads, investing in new growth for the war effort, had no choice but to lobby the President and Congress for some relief.

In July 1940, the White House incorporated a provision for amortizing facilities certified as necessary for the purpose of national defense over a 5-year period in

the excess profits tax bill. On October 8, 1940, the law was passed by Congress.

The amortization laws were intended to help overcome the hesitancy of many contractors and private investors to invest their private funds needed railroad facilities. The Tax Amortization Committee of the Advisory Commission realized that railroads were constructing urgently needed facilities at the request of the Commissioner for Transportation and approved by the War Department. Therefore, certificates of necessity (document certifying the expenditure as necessary in the interest of national defense and authorizes use of tax amortization deductions) were being approved for from 35 percent to 100 percent of the costs.

How successful were the laws? The War Department issued necessity certificates on facilities amounting to over \$1,210,700,000 by the end of 1941.⁵⁸ These tax savings allowed the railroads to continue the modernization of equipment and facilities programs that were in progress. However, in September 1945, the President stopped the tax amortization using Proclamation No. 2669 and declared the emergency over.

Federal Management of Railroads

During the war, the ODT through Presidential order possessed and assumed control of certain transportation

systems because of interruptions in service by strikes and labor difficulties.⁵⁹

The take over of railroads was not as extensive during WWII as during WWI. Table 3 of Appendix B shows the railroads possessed by the ODT. Note that, in the spring of 1946, all railroads were possessed and controlled for a period of ten days because of general strikes in the U.S. The ODT also coordinated the operations of all other forms of domestic transportation during that time.⁶⁰

Toledo, Peoria & Western Railroad

It is important to understand why the Government took control of railroads during WWII and what affect it had on them. I will use the Toledo, Peoria & Western Railroad as an example.

Labor strikes threatened to all but close down the Toledo, Peoria & Western Railroad as workers stopped work and fought over higher wages and better working conditions. The Toledo, Peoria & Western Railroad management tried to force their own settlement conditions on the workers, but to no avail.

On February 27, 1942, the National War Labor Board ordered arbitration under the Railroad Labor Act, but management refused to submit to arbitration. Thus, the War Department briefed the President of the United States that this interruption of train service would be detrimental to

the successful prosecution of the war. Therefore, on March 21, 1942 (see table 3), the President issued Executive Order 9108 and a federal manager in the ODT took control of the Toledo, Peoria & Western Railroad.⁶¹ Not unlike previous actions discussed in WWI, the Director of ODT received his orders, "to operate or arrange for the operation of such railroad in such manner as he deems necessary for the successful prosecution of the war."⁶²

The National War Labor Board negotiated the employees return to work. The board appointed an arbitrator, Judge Benjamin C. Hilliard, who held hearings to resolve the issues. He recommended that the new schedules of wages and working conditions established by the ODT and agreed upon by the unions be supplemented by a memorandum of agreement. He also recommended the schedules be formally agreed upon by both parties and wages be retroactive. Judge Hilliard further recommended the property be returned to the corporate owner for operation if both parties would accept these conditions and after the terms had been fulfilled.⁶³

The National War Labor Board approved the arbitrators recommendations for settlement. However, the management of the Toledo, Peoria & Western Railroad rejected the terms several different times. Therefore, on November 4, 1942, the National War Labor Board stated that it was imperative

the Government manage the Toledo, Peoria & Western Railroad for the duration of the war.

Toledo, Peoria & Western Railroad management sent letters to the ODT criticizing the management of their railroad under federal control. Their criticism concerned the concessions made and agreements entered into between the ODT and the unions. They were also unhappy with the National War Labor Board for approving wasteful practices (raising worker salaries equal to the industry average) ODT used in operating the Toledo, Peoria & Western Railroad.

However, neither the Executive Order (E.O.) nor the legislation contained any provision for compensation for the government take over of the Toledo, Peoria & Western Railroad. Upon take over, the ICC did an inventory and all non-operating properties were returned to the corporation. After the return of non-usable properties, the ODT attempted to pay all corporate obligations except for unmatured bonds but had no authority to do so.⁶⁴

Thus, on March 24, 1942, the President issued an amendment to E.O. 9108 authorizing the Director ODT to use funds from the railroad's net cash earnings account to pay lawful obligations on behalf of the corporation. The amendment further restrained the Director ODT from paying executive salaries beyond what he thought to be necessary. This amount was determined to be \$1,000 per month. The

Director ODT used the account to pay salaries to certain employees, office rent, and recurring expenses only. However, the tough question of adequate compensation was to be determined in claims court.⁶⁵

The executives of Toledo, Peoria & Western Railroad made several attempts to regain the railroad from federal control without accepting the settlements and agreements approved by the National War Labor Board. The Toledo, Peoria & Western Railroad filed suit against Mr. Stover, the federal manager of the railroad. The case was transferred to U.S. District Court where it was pending even after the railroad was returned to the owners. After the return, the Government moved for judgement upon the pleading because they believed the case had become moot and there was no substantial question left to be decided. But, the railroad fought back.⁶⁶

However, on May 10, 1945 in the case Toledo, Peoria & Western Railroad v. Stover (federal manager of railroad), the judge ruled that after the Secretary of War issued the Termination Order of January 18, 1944, all possession and control should have been terminated. The judge also gave the courts opinion on prior claims for possession:⁶⁷

And with reference to any claim of the plaintiff for compensation for prior lawful possession by the Director of Defense Transportation and by the Secretary of War, such claim cannot be adjudicated in this proceeding.⁶⁸

However, the railroad was not returned until October 1, 1945, because of the refusal of the management to sit down and negotiate with the unions and workers to resolve labor disputes. After the Toledo, Peoria & Western Railroad was returned, no trains operated and no employee worked or was allowed on railroad property. Thus, a bitter struggle ensued between both parties. The abandonment of the Toledo, Peoria & Western Railroad caused many companies along the right of way to lose business and go bankrupt because of the loss of transportation services.

Some of the damaged companies filed suit to get the railroad and unions back to work. On June 6, 1946, the 7th District Court in Illinois turned the Toledo, Peoria & Western Railroad over to a receiver to manage because the railroad corporation had voluntarily abandoned the operations of the railroad. This abandonment was caused, in part, by the railroad dropping the work related terms agreed on during the war and the Brotherhood of Railway Workers and other unions walking off the job as a result.

This situation continued with violence and sabotage between the two parties. As a result the shippers depending on the railroad lost their businesses because of non-availability of transportation to ship their products to market. Therefore, the shippers filed suit to force the Toledo, Peoria & Western Railroad and unions to settle their

differences for the good of their customers. The result of the case of Farmers Grain Co. verses Toledo, Peoria & Western Railroad is summarized in the decision rendered by the judge:⁶⁹

In considering the appointment of a receiver, the court should balance the benefits to be obtained against the injury to the corporation and its owners and will not appoint a receiver where the injury out-weighs the good. McDougal v. Huntington & Broad Top Mt. R. & C. Co., supra. In this case I believe the good to be accomplished far outweighs any possible injury to defendant railroad. Since October 1, 1945, its roadbed and rolling stock (except for one locomotive and a few cars) have been lying idle and, in my opinion, deteriorating faster than it would if in use. Further, the road has had practically no revenue during that period and obviously will be better off from that standpoint if a receiver runs it. The large profits made by the Federal Manager during the war period are some indication of the financial losses being suffered by the railroad as a result of non-operation. In my opinion, therefore, all parties, including the railroad, will be better off with a receiver than without one and this further strengthens my view that a receiver is necessary.⁷⁰

However, the case went to the Circuit Court of Appeals, 7th Circuit on November 20, 1946. On March 31, 1947, the Writ of Certiorari was granted. The judgement of this Court of Appeals was to reverse the 7th District Court decision. The judges argued that arbitration was available under statute and if the offer of arbitration is accepted, it becomes binding on all the parties. However, if the arbitration is not accepted, then the applicant is furnished with injunctive process. Judge Major summed his decision as follows:⁷¹

So I would reverse the order appointing a receiver, affirm the dismissal of the railroad's cross-complaint and direct the issuance of a mandatory injunction, enjoining compliance by¹² the railroad with its statutory duty to operate.

But, the case went all the way to the United States Supreme Court where the majority ruling was written as follows:

Oct. 13, 1947. PER CURIAM: The judgement of the Circuit Court of Appeals is vacated and the case is remanded to the District court with directions to dismiss the complaint as moot, on motion of the respondent, Toledo, Peoria & Western Railroad, it appearing that counsel for the Brotherhood of Locomotive Firemen and Enginemen et al. agree that the cause is moot.¹³

In summary, the Government did not pay damages/ compensation to the owners of the Toledo, Peoria and Western Railroad. This may be, in part, because the justice system did not believe the railroad (actually the owner Mr. McNear) tried to resolve its labor disputes. Another reason may be because the judges believed that the government control placed the Toledo, Peoria and Western Railroad in great financial condition at the end of federal control with a net operating profit of \$7,650,000.¹⁴

After the War

The strive for personal mobility changed the American transportation world. As a result, the railroads return on investment was extremely low and needed investors were placing their money in other ventures. The transportation

market was shifting because of expanding competition from the airline, trucking, pipeline, and barge industries. Regulation by the ICC also played a key role in this shift.

During the war, many people thought railroads must abolish their defensive attitudes and seek some badly needed and improved management to stay competitive with other forms of transportation. But, the railroads were slow to make changes and the American public, after the war, found freedom with the automobile more to their liking. As a result, Americans abandoned rail transport for a different mode of transportation with little thought of ever returning again. To have a fighting chance in this competitive environment, the railroads needed to produce better and cheaper transportation with fewer moans about unfair and uneconomic competition.⁷⁵

Mr. John Pelley, President, of the Association of American Railroads during the war, believed that the railroads would have little, if any, problems in the reconversion from war to peace. This was in due part to two factors. First, the same railroad plant could haul either war goods or peace (commercial) goods. Second, the improvements and changes made during the war had been accomplished without financial aid from the Government. He believed the only reconversion problem the railroads faced

was obtaining sufficient business to meet costs at the levels attained during the war.⁷⁶

Mr. Pelley went on to say there would be stiff competition for traffic requiring transportation service after the war as ground, water, and air services expand and grow. The railroads would be forced to compete with transportation industries which vastly improved their performance as a result of war experience and government support.⁷⁷

The question to be answered is how would the railroads fair under such conditions? The answer depended largely on the steps which the railroads took to meet postwar demands and public policy towards transportation. As to the first, the railroads had already acted, by taking full measure of the difficult job ahead. They tried to determine how to best accomplish those jobs. For instance, for over two and a half years, a special committee of railroad officers conducted a study of all forms of transportation, as well as phases of railroading. The primary purpose of this most extensive and intensive investigation was to find ways and means of making railroads more serviceable to the country and its customers.⁷⁸

One of the big questions was what the public policy would be toward common carriage after the war. Presently, the policy was a definite handicap to the railroads because

they provided and maintained their own roadways, paid taxes on them and covered all costs with charges to customers.⁷⁹

If this policy were continued after the war, it was questionable as to whether the railroads could attract the private capital necessary for future progress in railroading. Competition would severely handicap the railroads in their ability to contribute in full measure to the economic prosperity and stability of the nation through employment, purchases, and taxes. However, if a public transportation policy were created which allowed the railroads to haul a part of the total traffic of the future commensurate with their capabilities, then the public interest could have been served best. Under a policy like that, the railroads future might have been promising.⁸⁰

Revenue

In 1927, railroad earnings were nearly six percent after depreciation. In 1946, the railroads handled the heaviest volume of traffic in their history. However, the return on investment was only 2.75 percent. Without a reasonable return on investment, railroads could not simultaneously improve services, reduce rates, and raise wages while attempting to raise capital and pay stockholders and investors a reasonable return. The railroads had to be allowed a chance to earn adequate return on investment because experience showed the Nation can not carry on

business or make war successfully without adequate rail transportation.⁸¹

Table 4 of Appendix B shows the net investment of the railroads compared to the rate of return on the investment from 1921 to 1957. From the table, you can see, for example, the difference between a 2.75 percent rate of return in 1946 and a 4.31 percent rate of return in 1948. Because the rates of return are low to begin with, any decrease in the rates would cause investors to place their investments in other industries where higher rates of return could be achieved.

Competition and Shifts in Market

The railroads emerged from WWII in a strong financial position due in part to expansion of their traffic (see Table 5 of Appendix B for the increase in billions of revenue ton-miles), a reduction of service standards, and a lowering of unit costs during the war. Even so, the record of low and uneven earnings put some of the larger railroad companies working capital in such a position during the 1957-58 recession that the threat of bankruptcy was eminent.

To compound this problem, even though intercity freight traffic rose for all types of carriers, the railroads have failed to share in this growth like the competing trucks, barge operations, pipelines, buses, airlines, and the private automobile did. In fact, by

reviewing rail freight traffic at Table 5, you can see that the railroad share of intercity freight traffic steadily declined.

This trend continued as inflation and increased wages raised operating expenses. Several increases in tariff rates helped but they really hurt the railroads in the long run. As shipper's cost went up, the shipper was more inclined to look for alternative modes of transportation to cut his costs. As a result, railroads lost another customer and revenue declined.⁸²

The railroads lost most of their passenger traffic to private automobiles and airlines. This loss of passenger volume and general lack of growth account for the lack of adequate passenger trains today.⁸³

Bulky merchandise traffic that had high tariff rates and moved over short distances was the first to go over to the trucking industry. This was the railroads' principal loss to the trucking industry. However, as highways and trucks improved, the trucking industry also took a portion of medium and long-haul freight traffic. This was especially the true when the cargo was small and/or less than a full freight carload. Railroads were generally left with long-haul, low grade commodities.⁸⁴

Regulation

Railroads believe that government regulatory policies were, and still are, limiting factors to their operation in the transport market. This is because the railroads' attempts to get an increase in rates and keep pace with inflationary operating and capital costs met many delays and restrictions. Their attempts to reduce certain rates on competitive traffic to try and stop traffic diversion, regain lost revenue, or share in new traffic were impeded by government regulations. The railroads complained that the restrictive government regulations apply to all railroads and only to a limited extent to competing water and motor carriers.⁸⁵

However, the railroads must share responsibility for the effects of regulation because they sought regulation as a means of protection from competition with other types of carriers vice using the relatively unrestricted right to fight for market shares in the free competitive market place. As a result, railroads failed to deal with growing competition and to effectively expand their cost economies of scale in the market.⁸⁶

Ernest W. Williams, Jr. wrote the following about carrier competition:

While motor carriers have effectively pursued their highly advantageous policy [adoption of rail rate structure, with a parity of rates for high-rated traffic and minimum-rated stops and other devices to

discourage low-rated traffic], railroads appear to have lost one opportunity after another to establish under a basis for rates in the competitive area which would give scope to their cost advantage. If the commission has refrained from an effort to detect and to recognize the advantages of the rails, it is clear that the fault lies heavily with the rail carriers themselves. In the formative period for the principles we have discussed in the critical years immediately after 1935, railroads were reluctant to focus any attention upon their cost advantages and failed to force the issue. A legislative policy capable of giving the railroads adequate scope for the exercise of their inherent advantages--of which low cost for certain types of haul is undoubtedly the greatest--was allowed by default of the rail carriers during the many opportunities open to them to develop adversely, until the weight of the decided cases become a serious bar to reform. Nor are the railroads yet ready, as an industry, to take the initiative which is open to them under the law. Since the motor-carrier industry has been not merely allowed but encouraged to extend well outside the bounds within which it has cost parity or advantage, any adjustment at this late⁸⁷ date must involve a strenuous fight indeed.

The railroads criticized the ICC regulatory process because they were losing large revenues and earnings waiting for several months to a year for the ICC to decide on their petitions for increased rates. Also, they complained that even though the ICC granted interim rate increases, they were not sufficient and did not cover increased wages and other expenses. Finally, the general rate increases that were eventually approved were not adequate in many cases.⁸⁸

Regulation causes an imbalance in the competitive market. Regulation restrained the railroads from making quick adjustments to the market and competing carriers. The

practice of holding the railroads to a rate parity with motor carriers denied railroads the opportunity to make their cost advantages more effective.⁸⁹

Postwar railroad returns were characterized as substandard and inadequate by the ICC. A review of table 4, Rates of Return on Investment, shows the cyclical decline in railroad yields. Thus, the railroads had to look at internal sources for capital as private capital investment was scared away by the low and erratic earnings.⁹⁰

Progress

In all the years of railroad development, more significant progress was made from 1922 through 1947 than in any other period. In these years, this country received many national benefits from the railroads spending over \$13 billion on betterment.

One national benefit from these investments was victory in war. Without the railroads, the war could not have been won. Without these investments and expenditures, the railroads could not have handled the great volumes of traffic that directly supported the war effort.

A second national benefit was gained in safety. Railroad operations in 1947 were twice as safe as in 1922. This trend is expected to continue as modernization continues.

A third national benefit was in passenger comfort and satisfaction. The railroads developed streamlined trains, air-conditioned cars, and Pullman sleeping cars to please their customers.

However, the greatest benefit of all was from improved plants and equipment that, in turn, led to efficient, lower cost freight service. For example, in 1947 the average freight car produced two and a half times the amount of service for every hour of road service than it did in 1922.⁹¹

How Were Problems Resolved?

Problem

Lost Revenue. Prior to the war, the President of the United States called the American railroad executives together to advise him of their plan and capability to privately handle another national emergency. Their recommendation to the President and War Department was for a higher rate structure to cover the rising cost of operations if war broke out again. This recommendation was followed at the outset of the war, but was later nullified by the Government.

Solution

None offered by the Government for nullifying the proposed rate increase at the start of the war. After the

war, Congress took a step toward solving some of the problems by passing the Transportation Act of 1958. This act relaxed, somewhat, the ICC control over competitive rates. It extended, for the first time, the authority of the ICC to allow railroads to discontinue passenger train service if the service was not profitable. It strengthened ICC control of intrastate rates that burdened interstate commerce. The act clarified the exemptions from regulation extended to truckers of agricultural commodities and to private carriers. It also authorized a temporary program of government guarantees of loans to the railroads. Even so, Senate Resolution 303 to the Transportation Act of 1958 recognized that much more remained to be done.⁹¹

However, these attempts to resolve the problems did not provide any tangible or monetary payment for lost revenues caused by competition or rate increase nullification. The Government took the attitude of *laissez faire* and let the new growth industries of automobiles and commercial aircraft find their market share or niche without regard to the possible effects on the loss of mass rail transport. The growth of automobile and airline market share changed the future of railroading for ever.

Problem

Recouping money spent on conversions and expansions for defense purposes (amortization problem).

Solution

The railroads lobbied the White House and Congress to ensure tax laws remained in effect long enough for them to recoup depreciation and other tax advantages from expansions for defense purposes. This resulted in a White House decision to incorporate a provision in the excess profits tax bill for amortizing the facilities certified as necessary for the purpose of national defense over a 5-year period. The law was passed by Congress on October 8, 1940.

During the war, certificates of necessity were approved by the War Department for from 35 percent to 100 percent of the costs of those facilities built for the defense purposes. The War Department issued these necessity certificates on facilities amounting to over \$1,210,700,000 by the end of 1941.

However, by spring of 1943, the War Department moved to severely restrict or eliminate the certificates as they believed the limiting factor in the production of war supplies was no longer facilities, but materials and manpower. This was exactly what the railroads feared would happen and they would not be able to take tax advantage on their investment promised under the law. In September 1945, the tax amortization was stopped by the President signing Proclamation No. 2669 and declaring the emergency over.

Problem

Lost market shares. The railroads did not share in the post war growth as the competing trucks, barge operations, pipelines, buses, airlines, and the private automobile did. The railroads believed Government regulatory policies limited their operation in the transport market. Their attempts to get an increase in rates met many delays and restrictions. Their attempts to reduce certain rates on competitive traffic and stop traffic diversion, regain lost revenue, or share in new traffic were impeded. The railroads complained that the government regulations applied to all railroads and only to a limited extent to competing water and motor carriers.

Solution

None offered by the Government.

Problem

Government regulation was not applied equally over all transportation industries to allow the railroads to compete.

Solution

None, the Government took a laissez faire attitude and let the market and customer decide the pricing/transport issues of survivability.

Summary

The experience of the railroads in WWII provides precedents that are relative to the CRAF program. These precedents were the need for transportation assistance to prosecute the war and the problems associated with exclusive government business (e.g. lost revenues and market shares). The Government-railroad relationship in WWII was similar to WWI in that the Government took control of only a few railroads, but highly dissimilar because they did not control all railroads throughout the war.

During WWII, railroads did a much better job of moving the nation's commercial and military shipments to port without government control. They were not a burden on the tax payers as they were during WWI because they paid about \$5 million in taxes daily. However, they still needed assistance from the government in the form of loan guarantees and investment recoupment. They needed assurance that tax laws would be retained to enable them to recoup their depreciation from expenditures on equipment and facility improvements required by the War Department. The government came through and provided this assistance.

However, the Government's track record was not so good in helping the railroads regain/recoup lost revenues and market shares. As the trucking industry gained a foothold on small package and less than car load (railcar)

business, customers shifted their mode because the truck was, for the most part, more timely and less expensive. The railroads petitioned the Government through the ICC for regulation on all transportation modes of shipment to give railroads a chance to compete on the same level with the trucking industry. These regulatory initiatives never developed and the railroads continued to see revenues dwindle along with market shares.

That was the situation with the railroads and how they attempted to resolve the tough war related problems of lost revenues and market shares. Next, this thesis will look at Desert Storm/Desert Shield and discuss what problems the CRAF carriers had in relation to their activation.

Desert Shield/Desert Storm

Prior to the Gulf War

Prior to 18 August 1990, the CRAF had never been activated. This program was on the shelf for 38 years and never tested. However, the DOD and Air Force knew the CRAF aircraft were operational because many have flown daily contract missions throughout the world for the DOD since its inception.

Since de-regulation of the airline industry in the late 1970s, many well-known airlines have either filed for bankruptcy or gone out of business. The CRAF program was certainly affected when carriers such as Pan Am filed for

bankruptcy and ceased to exist. Because of the bankruptcy, the DOD lost the carrying capacity of Pan Am's 18 modified B-747 aircraft because the Government did not have a lien on the aircraft only accounts receivable plus over \$400 million in enhancement money. However, with exception to the Pan Am enhancements the CRAF enhancement program is very cost effective and a bargain cost as explained in Chapter 1.

During the War

The use of CRAF during Desert Shield/Desert Storm has precedent established during WWI and WWII because of the Government's need for transportation during emergencies. However, it is greatly dissimilar in that the airline industry is a voluntary participant in CRAF. While voluntary, when activated, several carriers pulled aircraft out of scheduled service anticipating call-up and one carrier had to hire replacement aircraft to fill voids or lose market share in the small package delivery industry.⁹³

The Military Airlift Command had an adequate and effective flow of forces into the Gulf War region. Nearly all MAC strategic airlift capability was applied to Operation Desert Shield plus an additional 51 missions flown by CRAF volunteers prior to CRAF activation. With the urgent need for expanded airlift capability, CINCMAC activated CRAF Stage I on 18 August 1990. Stage I provided

18 passenger and 23 cargo long range international (LRI) widebody aircraft to supplement AMC's capability.⁹⁴

On 17 January 1991, SECDEF approved CINCMAC's request to activate the cargo segment of CRAF Stage II. This request did not include the activation of any additional passenger aircraft beyond Stage I because they were not needed to achieve the mission. Even though activation of Stage II provided 17 LRI cargo aircraft above Stage I on paper, the increase was only seven or eight aircraft because the others were already volunteering.⁹⁵

Movement Totals

Operation Desert Shield/Desert Storm was an unprecedented success story for airlifters. As of 24 April 1991 (date CRAF activation was terminated), MAC had flown more than 17,300 total missions (20,000 with Desert Sortie redeployement missions included). MAC hauled more than 579,200 tons of cargo (674,100 tons with Desert Sortie redeployement tonnage included). MAC transported more than 500,000 passengers and troops (751,100 passengers with Desert Sortie redeployement included). This was the equivalent of moving an entire city the size of Seattle, WA, over 7,000 miles. That includes not only the people, but their cars and trucks, food, retail stock and household furnishings.⁹⁶

During Desert Shield/Desert Storm, CRAF aircraft participation included moving more than 397,300 passengers and 95,300 tons of cargo on over 4,800 missions without a single accident or mishap.⁹⁷ CRAF flew 19.4 percent of the inter-theater airlift missions in Desert Shield/Desert Storm and moved over 63.1 percent of the passengers (figures include some redeployment as of 24 Apr 91).

CRAF's participation in the first-ever activation was an overwhelming success. Both the Secretary of Defense and Secretary of Air Force publicly stated that this airlift augmentation provided by CRAF before and during Operation Desert Shield/Storm was a complete success.⁹⁸

Congressional Hearings

On 10 Oct 90, the House Investigations and Oversight Subcommittee of the Public Works and Transportation Committee held hearings on the CRAF support of Operation Desert Shield.⁹⁹ The subcommittee reviewed how the CRAF program worked, what problems were encountered, and what could be done to continue the partnership.

Mr. Robert Moore, Director, Transportation Policy Office of the Assistant Secretary of Defense (Production and Logistics) briefed the subcommittee that:¹⁰⁰

It would cost over \$10 billion to replace the commercial cargo capability with military aircraft, not including aircrews or annual operating costs.

From a National Security standpoint, a strong CRAF program is essential and one of the nation's most cost effective defense programs.

Industry Executives have expressed concern that greater demands for civil air could have a negative impact on company operations.¹⁰¹

Mr. Edward Driscoll, President, National Air Carrier Association (NACA) briefed the following:¹⁰²

While we are pleased that you are focusing on this very important issue, we do believe it is a little premature to address of the issues in connection with CRAF. . . . Until we have analyzed in more detail the impact of this operation. . . we cannot provide you with specific recommendations.

Suffice to say, the civil airlift operations in support of Desert Shield went extremely well.

The carriers represented by NACA provide 109 aircraft to CRAF. . . .

The ability of civil carriers to support MAC in all types of emergency situations is clearly documented and that there is no question of their responsiveness.

The carrier should have anticipated the impact on commercial operations if CRAF was activated.

Some problems were encountered which affected the civil support of Desert Shield as well as continuing commercial operations which were deemed essential by the Department of State for foreign policy considerations as follows:

A. Crew duty time had to be extended from 100 to 150 hours per month.

B. Title XIII insurance was required to cover war risks, both for military operations as well as commercial flights operating in the Persian Gulf. . . .Provisions governing war risk insurance should be reviewed and revised so that the rates to be charged on a premium basis could be set at the rates in effect prior to the emergency.

C. The activation of Stage I necessitated a carrier with draw its equipment from commercial operations and make it available to MAC within 24 hours of notice of call-up. However, the carrier did not receive any compensation for this unless a service order was issued and the carrier operated its aircraft pursuant to that order.¹⁰³

Mr. Nestor Pylypec, Vice President for Industry Services, Air Transport Association (ATA) briefed the following:¹⁰⁴

MAC should implement its senior lodger arrangement for support of commercial aircraft that are part of the MAC Annual Airlift Services Agreement.

One refinement needed was streamlining of operations for turnaround of commercial aircraft at military bases and at enroute airports not normally used by carriers.

Reaffirmation of the incentive policy contained in the National Security Council directive regarding the CRAF program.

Airlines interpret the National Airlift Policy as requiring the military to meet minor surges by increased use of military aircraft and activation of airlines during surges or initial military buildup.

In accordance with NSC directive, we hope MAC will continue to remain sensitive to harm it can cause the carriers upon which it depends the most in making the decision to activate Stage I of CRAF.

By failing to exclude aviation from the current round of trade talks on services, the U.S. government could hurt the airlines to the point that airlift support necessary in a future emergency may be lacking.¹⁰⁵

The Congressmen were exploring ways to protect carriers due to disadvantages or economic harm from CRAF participation in the Gulf War.

Representative Bob McEwen (R-Ohio) discussed a revenue sharing proposal. He believed that revenue sharing with foreign carriers which gain from the absence of a US carrier on a route could be reviewed. He also brought up the idea of possibly raising landing fees for non-U.S. carriers.¹⁰⁶

Representative Dante Fascell (D-Fla) chairman, House Committee on Foreign Affairs and Rep James Oberstar (D-Minn), chairman, of aviation subcommittee, said they would be willing to investigate some form of reciprocity to protect carriers, including bilateral agreements.¹⁰⁷

Even though this subcommittee hearing was a step in the right direction, no other hearings were convened to continue the discussion to resolve concerns over lost revenue and market share.

CRAF Study

During Desert Shield/Desert Storm, the DOD contracted with Logistics Management Institute (LMI) to study the CRAF program. The LMI study came up with several recommendations for changes that would carry the CRAF into the 21st Century. However, LMI did not address all of the carrier concerns because the war was not concluded. Also, the carriers did not have enough activation time logged to see all the different problems that could develop. The Air force attempted to have the LMI study delayed until after the war

to gather all the information and then fine tune the program if required. However, the DOD went ahead with the study. For the most part, the Air Force did not accept LMI's recommendation to select carriers in each stage by lottery. LMI also recommended combining the three stages into only two stages. However, the carriers and the Air Force opposed that idea because the carriers commitment to a particular stage is based on a risk-reward relationship. The Air Force did not believe the CRAF program and its stages required this wholesale reorganization.¹⁰⁸ According to HQ MAC officials:

The basic structure of the program will remain the same. MAC officials have rejected the recommendation of a Pentagon-sponsored study by Logistics Management Institute calling for scrapping the three-stage call-up system and instituting a lottery system.¹⁰⁹

However, the Air Force took the lead and fine tuned the CRAF program after the war.

After the War

Not until after the Gulf War were the real problems/ costs known from the first-ever activation of the CRAF. If these problems are not addressed, the CRAF carriers might not stay in the voluntary program. The carriers seek a fair evaluation from the Government and consideration of their need to make a profit and stay in business. These costs were addressed in association meetings after the war.

After many meetings with his association members in June 1991, Mr. William W. Hoover, Executive Vice President Air Transport Association of America, presented several suggestions for making the CRAF program better.¹¹⁰

First, MAC should rethink the program for airlines to commit aircraft to Stage I and II. Traditionally, the primary incentive has been the promise that MAC would favor airlines making the greatest commitment to CRAF when awarding its considerable peacetime business. . . . When activated at a busy time of the year, as happened last September, airlines find themselves hard-pressed to meet their commitments to passengers already holding tickets. And they run the risk of losing market share, in both the passenger and cargo business, to foreign-flag competitors. Recent experience made the costs and benefits of CRAF participation more apparent than they had been previously, and airline support of the program could wane without new incentives.

Second, MAC should try to fly more hours with its own military aircraft and seek commercial lift under the MAC Airlift Services Agreement during surge, or initial buildup. CRAF Stage I should be activated only when airlift transportation requirements exceed MAC's internal resources. The airlines are committed to meeting their responsibilities under CRAF. They will be there when called. But MAC must be more sensitive to the harm it can cause the carriers it depends on the most when it makes the decision to activate Stage I.

Third, the War Air Service Program, or WASP, must be updated.¹¹¹

Mr. Hoover went on to discuss other policy issues that his association and others believe must be addressed.

There are a number of broader policy issues the airlines also believe the government must address if it is to ensure the future health of this important defense asset. The airlines are in the midst of their worst financial crisis in years, having lost \$4 billion in the six-month period from last October

through March. . . . In Europe and Asia, where airlines suffered similar financial hardships, governments took steps to shore up their carriers. But that was not the case here in the United States.¹¹²

The CRAF carriers problem of lost market shares is similar to the railroads losing market shares during WWII. Mr. James Ott, a writer and air transportation analyst for Aviation Week and Space Technology magazine, discovered at least one CRAF carrier that lost some market share in his article Desert Shield Deployment Tests CRAF's Viability:

But U.S. operators in the North Pacific region sustained some market losses when aircraft had to be diverted and flights were cancelled. Northwest cancelled one passenger flight last summer during the peak of the call-up, but it claims to have had no other problems with participation.¹¹³

Mr. Ott goes on to discuss the carriers chief concern with participating in CRAF:

Airline participants, eager to meet their objectives, are counting the costs and benefits of their involvement. Carriers have been watchful of their liability to legal actions and concerned with other forms of commercial damage that could result from their active participation in the government program.

The chief concern of airline managers is the loss of market share because of the diversion of aircraft to the military, particularly among cargo carriers as the holiday season approaches.¹¹⁴

In a HQ MAC article on shrinking incentives, a MAC official supports this thesis author's theory that CRAF carriers lost both revenues and market shares.

Some carriers may be reluctant to participate in CRAF, MAC officials said. Some cargo carriers lost

business, because of the activation of their CRAF aircraft. Passenger carriers, however, hit hard by the economic downturn and a decline in international bookings, welcomed the additional business.¹¹⁵

One carrier in particular, United Parcel Service (UPS), filed a claim for lost revenue. According to Mr. Greg Treitz, UPS Mobilization Representative, UPS had no additional aircraft to back-fill those aircraft lost due to activation. Because the small package business is a highly competitive market, UPS had no other choice than to contract/lease aircraft to replace those lost or lose market shares. UPS also lost several charter missions scheduled months in advance because the aircraft for these charters were activated. Mr. Treitz indicated that UPS lost revenue in the international market also because it had to delay opening their new offices and route to Japan until the wide-body aircraft completed their activation with CRAF. Mr. Treitz said the claim was denied by HQ MAC on the basis that the Government (MAC) could not pay compensation for lost revenues.¹¹⁶

An assumption from finding proof that one carrier lost revenues in lieu of losing market shares is that there are probably other carriers that lost revenues and market shares. However they may not come forward because this activation actually helped them during this economically constrained period existing during and after the war.

AMC is currently working on contract negotiations for the FY 94 - 96 RFP (request for proposal) contract terms with the CRAF members. The FY 93 RFP generated a lot of discussion at the September 23-25, 1991, CRAF Mobilization Representatives Conference at Scott AFB, IL. Several large CRAF carrier Mobilization Representatives indicated their carrier may not continue to participate unless the Air Force makes concessions including compensation for lost market shares and lost revenues.¹¹⁷ Some of the topics discussed at the meeting include:

- A. Certification and shipment of hazardous material.
- B. Loading issues.
- C. Command, Control, and Communications problems.
- D. Establishing the Senior Lodger in Stage I and II.
- E. Contract terms.
- F. Establishing a pre-activation program.
- G. Title XIII Indemnification issues.
- H. Extraordinary costs associated with Stage I and II activation.

HQ MAC continued negotiations with the CRAF participants on these issues until the contracts were signed in November 1992. While many issues were resolved, the issues of lost revenue and lost market share discussed under extraordinary costs associated with the activation of the CRAF were not.

With assistance from the Secretary of the Air Force's staff, AMC contracting, legal, and CRAF offices are currently working to add new incentives to the contract to entice civil air carriers to remain CRAF volunteers. Their work and success is not only commendable but also paramount in keeping this program on track.

With the drawdown of our Armed Forces and a shrinking budget, the CRAF program becomes an even bigger "bargain cost" and continues to play a significant role in our mobilization efforts around the world. It certainly requires our care and respect because the future of CRAF lies in the terms set forth in these contracts.

The CRAF carriers are under siege from stiff competition because of de-regulation and foreign carriers that are subsidized by their government. Therefore, the CRAF program is also under siege because as carriers like Pan Am go out of business, the DOD loses that amount of capability from the program. This lost airlift capability affects the DOD's ability to deploy Army, Air Force, Marine and Navy forces and equipment to potential combat areas.

There will come a time when the DOD can no longer stand by and let the CRAF carriers go out of business because with them goes almost 50 percent of the capability to meet the airlift requirements of another Desert Storm/Desert Shield. The DOD must realize the situation the

carriers are in and work to a reasonable settlement that guarantees commercial air carriers will be available when they are need.

Problems

Problem

Lost market share in both the passenger and cargo business to foreign-flag competitors.

Problem

Lost revenue due to removing aircraft from routes where passengers hold paid tickets and cargo is scheduled and available for movement. Faithful customers could be lost to other competitors.

Problem

Foreign governments continue to subsidize their air carriers which gives them an advantage on the open market place. The U.S. Government refuses to support the American civil air carriers in a like manner even though the airlines are in the midst of their worst financial crisis in years.

Summary

Let me recap the historical precedents and how they relate to CRAF. The bottom line is the Government gets involved with modes of transportation it deems necessary for national emergencies. This involvement fulfills the

Governments need to prosecute the war effort but causes problems with the transportation industry employed. These problems are similar because they revolve around the public sectors (Government) control or monopoly (exclusive use) of certain assets (railroads during WWI and WWII and CRAF during Desert Shield/Desert Storm) during war and the private sectors (companies furnishing Government the assets) loss of compensation/revenues and market shares.

The experience of the railroads in WWI provides precedents that are relative and similar to the CRAF program. In WWI, the Government stepped in and took the railroads from the private sector and put them in the public sector to control and maintain the smooth flow of supplies and people for the war effort. The Government fulfilled its transportation needs even though force (control) was required. Problems caused by the diversion of railroad assets from the private sector included:

A. Lost revenue - Director General (Government) arbitrated compensation of the claims.

B. New capital for growth - Railroads raised their own capital.

C. Increasing labor and material cost and taxes - Government did not provide relief for taxes or material cost, but Labor Board sanctioned reduction in wages.

D. Increasing government regulation - No relief.

The experience of the railroads in WWII also provides precedents that are relative to the CRAF program. In WWII, it was not necessary for the Government to control all the railroads, just a few. By enlisting the voluntary cooperation and assistance from the railroads, the traffic flow for the war effort went much more smoothly than during WWI. Again, the Government fulfilled its transportation needs without the amount of force/control required during WWI. However, problems caused by diversion of railroad assets from the private sector included:

A. Lost revenue - No solution offered by the Government for nullifying the proposed rate increase at the start of the war.

B. Recouping money spent on conversions and expansions for defense purposes (amortization problem) - Received relief in the form of tax advantages from expansions for defense purposes.

C. Lost market shares - The railroads did not share in the post war growth as the competing trucks, barge operations, pipelines, buses, airlines, and the private automobile did. The Government provided no relief.

D. Government regulation - No relief, the Government took a laissez faire attitude and let the market/customer decide the price and carrier.

The experience of the CRAF carriers during Desert Shield/ Desert Storm has precedents established during WWI and WWII that are relative to the CRAF program. These precedents were the need for transportation assistance to prosecute the war and the problems associated with exclusive Government business (e.g. lost revenues and market shares). The Government-air carrier relationship in Desert Shield/Desert Storm was similar to the Government-railroad relationship during WWI and WWII in that the CRAF carriers volunteered for the program and would respond when activated. However, CRAF is highly dissimilar because the Government did not take possession of any commercial aircraft or company during the emergency. However, problems caused by diversion of commercial aircraft assets from the private sector included:

A. Lost market share in both the passenger and cargo business to foreign-flag competitors - No solution.

B. Lost revenue - No solution because MAC determined that the Government could not pay for lost revenue.

C. Subsidy and regulation - No solution for subsidy, but pricing is de-regulated.

In analyzing the data of lost revenues, the author determined that during WWI compensation was paid by the Government. However, it was not during WWII. Therefore, there is precedent for reimbursing commercial transportation

carriers during an emergency when providing a service under contract to the Government. Therefore, the Government could pay the CRAF carriers for lost revenues during activation much like it did for the railroads during WWI.

In analyzing the data of lost market shares, the author can find no precedent to prove that the Government paid the railroads during WWI or WWII for lost market shares. Therefore, there is no precedent to help solve this problem for the CRAF.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Response to The Research Question

This study looked at solving problems facing CRAF participants by reviewing historical precedents established between the government and railroads during WWI and WWII. These precedents were the need for transportation assistance to prosecute the war and the problems associated with exclusive government business. The research sought to answer the following research question:

Are there precedents already established by the U.S. government in dealing with other common carriers during war that can help resolve many of the current issues facing the CRAF carriers?

The response: Yes, there are precedents.

Conclusion

Lost revenues suffered by CRAF participation could be handled much like that of the railroads in WWI. During WWI, the FCA authorized the payment of compensation annually in the amount not to exceed the carrier's annual operating income for a three year period. This compensation formula helped most struggling railroads. Those carriers hurt by this formula filed for additional compensation because of

exceptional conditions during the three year test period. All the additional compensation claims were eventually settled by agreement with the Director General.

Recommendation

1. AMC continue with their efforts to improve the incentives within the framework of the contract. The DOD along with the civil air carriers should seek Congressional approval for funding and development of a formula to compensate the CRAF carriers much like the FCA did in WWI for the railroads. This formula would take several years of financial data into account. By paying the carriers using a formula over time would take care of any down turns in the market. It would not, however, take into account a growing or expanding economy with a sharp increase in compensation. These situations could be taken care of with a special contract clause. Also, payment of lost revenue because of activation would be covered if the carrier can prove the claim.

2. Or, pay the current market value for the aircraft lease as if it were on the open market. Cover any lost revenue that can be proven that the carrier could not or did not have time to reschedule if that particular aircraft happened to be the aircraft called.

Conclusion

The U.S. Government set a precedent by not paying the railroads for lost market shares. Therefore, it is improbable that the Clinton Administration would allow such payments. However, with the right support from Congress, some foundations could be laid now for the future in attempting to recoup lost foreign market shares given that competing foreign airlines are subsidized by their governments. All the while, our civil air carriers are not subsidized and must compete on an uneven playing field.

Recommendation

The DOD and DOT should ask members of the House Investigations and Oversight Subcommittee of the Public Works and Transportation Committee to commission a study on this issue and bring recommendations to the committee. These recommendations could help establish the foundation for resolving the penalization of U.S. air carriers for supporting their nation during an emergency.

Conclusion

During WWII, the government provided tax breaks so the railroads could recoup investments made on capital equipment required for movement of cargo and passengers to the seaports. The DOD could seek a similar incentives program for the CRAF enhancement program to modify all or

part of the wide-body commercial aircraft in CRAF to accept military cargo and pay the associated costs. This would make more B-747, L-1011 and DC-10 aircraft available to haul DOD palletized cargo. A program like this would help ensure that an adequate level of commercial aircraft equipped to move palletized cargo are available given the current situation of airline failures.

As previously discussed, the CRAF is a bargain cost to the DOD. Mr Robert Moore, Director, Transportation Policy Office of the Assistant Secretary of Defense (Production and Logistics) testified that it would cost over \$10 Billion to replace the commercial cargo capability of CRAF with military aircraft, not including aircrews or annual operating costs. Thus with the decreasing funding and base closings of the Armed Forces, a program such as this would not only save millions of dollars but also provide a pool of valuable airlift resources for the DOD's use.

Recommendation

The DOD should develop a plan and take it to Congress that explores the potential benefits to be gained in reduced costs if the enhancement program were expanded to provide more CRAF cargo capability as the DOD and Air Force operations maintenance (O&M) funding is reduced.

ENDNOTES

Chapter 1

¹Ron Priddy, Colonel, USAF, interview by James H. Rainey, Major, USAF, 13 September 1990, Personal interview, Scott Air Force Base, IL.

²Department of Defense, Civil Reserve Air Fleet, Memorandum of Understanding, Washington, D.C.: U.S. Government Printing Office, 1987.

³President, National Strategic Decision Directive. "National Airlift Policy. National Strategic Decision Directive 280." Federal Register (June 1987).

⁴Department of the Air Force, Headquarters Military Airlift Command. Civil Reaserve Air Fleet. MAC Regulation 55-8, Scott AFB, IL: U.S. Government Printing Office, June 28, 1988, 9.

⁵Ibid. 10.

⁶Ibid.

⁷Ibid.

⁸Ibid.

⁹Ibid.

¹⁰Ron Priddy, Colonel, USAF, interview by James H. Rainey, Major, USAF, 13 September 1990, Personal interview, Scott Air Force Base, IL.

¹¹Department of Defense. Civil Reserve Air Fleet, Memorandum of Understanding, Washington, D.C.: U.S. Government Printing Office, 1987.

¹²Department of the Air Force. Headquarters Military Airlift Command. Civil Reaserve Air Fleet. MAC Regulation 55-8, Scott AFB, IL: U.S. Government Printing Office, June 28, 1988, 11-13.

¹³Ibid. 10.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid. 18-19.

¹⁷ Ibid. 29-30.

¹⁸ Civil Reserve Air Fleet. 10 U.S. Code. sec. 9511-3
(1990).

¹⁹ Congress. United States House of Representatives,
Subcommittee on Public Works And Transportation, Civil
Reserve Air Fleet (CRAF): Hearing before the Subcommittee on
Investigations and Oversight Committee on Public Works And
Transportation; 101st Cong., 2nd sess., 10 October 1990.

²⁰ Tom Fraley, Major, USAF, interview by James H.
Rainey, Major, USAF. 13 September 1990, Personal interview,
Scott Air Force Base, IL.

²¹ Ron Priddy, Colonel, USAF, interview by James H.
Rainey, Major, USAF. 13 September 1990, Personal interview,
Scott Air Force Base, IL.

Chapter 4

¹ Walker D. Hines, War History of American Railroads
(New Haven: Yale University Press, 1928), 1.

² Ibid. 1.

³ Ibid.

⁴ Ibid. 4.

⁵ Ibid.

⁶ Ibid, 5.

⁷ Ibid.

⁸ Ibid.

⁹ Ibid.

¹⁰ Ibid, 12.

¹¹ Ibid, 6.

- ¹²Ibid. 8.
- ¹³Edward Hungerford, Transport for War (New York: E.P.Dutton & Company, Inc., 1943) 63.
- ¹⁴Hines, War History of American Railroads, 93.
- ¹⁵Hungerford, Transport for War, 61.
- ¹⁶Hines, War History of American Railroads, 95.
- ¹⁷Hungerford, Transport for War, 63-64.
- ¹⁸Hines, War History of American Railroads, 97.
- ¹⁹Ibid, 99.
- ²⁰Ibid, 98.
- ²¹Ibid.
- ²²Ibid. 115-120.
- ²³Hungerford, Transport for War, 64.
- ²⁴Hines, War History of American Railroads, 30.
- ²⁵Ibid, 216. —
- ²⁶Ibid. XIV.
- ²⁷Ibid, XIV.
- ²⁸Ibid, 221.
- ²⁹Ibid, 223.
- ³⁰Ibid, 225.
- ³¹Ibid, 226.
- ³²Ibid, 227.
- ³³Ibid, XII-XIV.
- ³⁴Ibid. 229.
- ³⁵Ibid, XIII.
- ³⁶Ibid. 95.

³⁷ Ibid, 229.

³⁸ Ibid. 227.

³⁹ Ibid, XII.

⁴⁰ G.C. Randal, "Rail Transport," Army Transport Journal Vol 1 No. 7 (August 1945): 34-35.

⁴¹ M.W. Clement, "Railroads Wartime Role," Army Transport Journal Vol 3 No. 5 (September-October 1947): 14.

⁴² Ibid.

⁴³ Office of Defense Transportation, Civilian War Transportation (Washington: U.S. Government Printing Office, 1948): 9.

⁴⁴ Joseph R. Rose, American Wartime Transportation (New York: Thomas Y. Crowell Co., 1953): 37.

⁴⁵ Office of Defense Transportation, Civilian War Transportation (Washington: U.S. Government Printing Office, 1948), III.

⁴⁶ Ibid, III.

⁴⁷ Ibid, IV.

⁴⁸ Ibid.

⁴⁹ Joseph R. Rose, American Wartime Transportation (New York: Thomas Y. Crowell Co., 1953) 37.

⁵⁰ Ibid, 29.

⁵¹ John J. Pelley, "What About the Railroads?," Army Transportation Journal Vol 1 No. 4 (April 1945): 13.

⁵² Ibid.

⁵³ Robert S. Henry, "Highballing Through War," Nation's Business Vol 33 No. 10 (October 1945): 27.

⁵⁴ Ibid. 27, 100, 102.

⁵⁵ Ibid, 102.

⁵⁶ Nation's Business Vol 34 No. 11 (November 1946): 19.

⁵⁷ Joseph R. Rose, American Wartime Transportation (New York: Thomas Y. Crowell Co., 1953) 31.

⁵⁸ Office of Defense Transportation, Civilian War Transportation, 214.

⁵⁹ Ibid, 269.

⁶⁰ Ibid, 9.

⁶¹ Ibid, 269-270.

⁶² Ibid, 272.

⁶³ Ibid, 271.

⁶⁴ Ibid, 273.

⁶⁵ Ibid, 274.

⁶⁶ Ibid, 233.

⁶⁷ Federal Supplement 60, Toledo, Peoria & Western Railroad v. Stover et al., Civil Action P-380 (St Paul: West Publishing Co., 1945) 587-599.

⁶⁸ Ibid.

⁶⁹ Federal Supplement 66, Farmers Grain Co. et al. v. Toledo, Peoria & Western Railroad et al., Civil Action P-787 (St Paul: West Publishing Co., 1946) 845-863.

⁷⁰ Ibid.

⁷¹ Federal Reporter 158, Farmers Grain Co. et al. v. Toledo, Peoria & Western Railroad et al., No. 9114 (St Paul: West Publishing Co., 1947) 109-122.

⁷² Ibid.

⁷³ 68 Supreme Court, Farmers Grain Co. et al. v. Toledo, Peoria & Western Railroad et al., 322 U.S. 748 (St Paul: West Publishing Co., 1947) 53.

⁷⁴ Federal Supplement 66, Farmers Grain Co. et al. v. Toledo, Peoria & Western Railroad et al., Civil Action P-787 (St Paul: West Publishing Co., 1946) 845-863.

⁷⁵ Hampton K. Snell, "What About Tomorrow," Army Transport Journal Vol 1 No. 1 (February 1945): 31, 46.

⁷⁶ John J. Pelley, "What About the Railroads?," Army Transportation Journal, 13, 29.

⁷⁷ Ibid.

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ Ibid.

⁸¹ William T. Faricy, "Railroads", Army Transportation Journal Vol 3 No. 3 (May-June 1947): 31.

⁸² James C. Nelson, Railroad Transportation and Public Policy (Washington: The Brookings Institution, 1959), 10.

⁸³ Ibid, 9-30.

⁸⁴ Ibid, 31, 34.

⁸⁵ Ibid, 111.

⁸⁶ Ibid, 116.

⁸⁷ Ernest W. Williams, Jr., The Regulation of Rail-Motor Rate Competition (1958), 221-222.

⁸⁸ James C. Nelson, Railroad Transportation and Public Policy, 125.

⁸⁹ Ibid, 146.

⁹⁰ Ibid, 229.

⁹¹ Association of American Railroads, "Railroads", Army Transportation Journal Vol 3 No. 4 (July-August 1947): 22.

⁹² James C. Nelson, Railroad Transportation and Public Policy, 412.

⁹³ Greg Treitz, Mobilization Representative for United Parcel Service, interview by James H. Rainey, Major, USAF, September 22, 1993, Telephone interview, Louisville, Ky.

⁹⁴ James Bates. Major, USAF, Public Affairs Office Headquarters AMC, Airlift Historical Data, Scott AFB, IL, 1990-1992.

⁹⁵ Ibid.

⁹⁶ Ibid.

⁹⁷ Ibid.

⁹⁸ Letter read by the Secretary of the Air Force from the Secretary of Defense at the CRAF dinner honoring CRAF participation in Desert Shield/Desert Storm, July 30, 1991.

⁹⁹ James Ott, "U.S. Carriers Want Changes in Military Airlift Program," Aviation Week & Space Technology, October 15, 1990, 31.

¹⁰⁰ Congress, United States House of Representatives, Subcommittee on Investigations and Oversight Committee on Public Works and Transportation, Civil Reserve Air Fleet (CRAF): Subcommittee on Investigations and Oversight Committee on Public Works and Transportation, 101st Cong., 2nd sess.. 10 October 1990.

¹⁰¹ Ibid.

¹⁰² Ibid.

¹⁰³ Ibid.

¹⁰⁴ Ibid.

¹⁰⁵ James Ott. Aviation Week & Space Technology, October 15, 1990. 31.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

¹⁰⁸ Frank Colson, SES-3, USAF, Associate Deputy Assistant Secretary (Transportation and Federal Aviation), interview by James H. Rainey, Major, USAF, September 1991, Personal interview and Staff Summary Sheets, Pentagon, Washington D.C.

¹⁰⁹ HQ MAC Public Affairs Office, "Shrinking Incentives for Airlines Pose Problems for CRAF Program," Aviation Week & Space Technology, September 9, 1991, 55.

¹¹⁰William W. Hoover, "The Desert Shield Airlift: A Great Success That Holds Some Valuable Lessons for the Future", Defense Transportation Journal (Alexandria: National Defense Transportation Association, June 1991) 54-55.

¹¹¹Ibid.

¹¹²Ibid.

¹¹³James Ott, "Desert Shield Deployment Tests CRAF's Viability," Aviation Week & Space Technology, December 10, 1990, 31.

¹¹⁴Ibid.

¹¹⁵HQ MAC Public Affairs Office, "Shrinking Incentives for Airlines Pose Problems for CRAF Program," Aviation Week & Space Technology, September 9, 1991, 55.

¹¹⁶Greg Treitz, Mobilization Representative for United Parcel Service, interview by James H. Rainey, Major, USAF, September 22, 1993, Telephone interview, Louisville, Ky.

¹¹⁷Ron Priddy, Colonel, USAF, CRAF Mobilization Representatives Conference 23-25 September 1991, Scott Air Force Base, IL.

APPENDIX A

GLOSSARY

Air Mobility Command. Located at Scott, Air Force Base Illinois was activated on June 1, 1992. It replaced the Military Airlift Command.

Combies. Wide bodied long range aircraft that have capability of carrying both cargo and passengers simultaneously.

Convertibles. Commercial aircraft that have the capability of being converted from carrying passengers to carrying cargo.

Executive Order 9108, March 21, 1942. Powers derived from the President for Office of Defense Transportation to take control and operate Toledo, Peoria & Western Railroad.

Freighters. Commercial aircraft that carry cargo only.

Government. Government refers to the United States Government.

Intertheater. The movement between CONUS and a theater of operation. Example: Intertheater airlift would be a C-141 aircraft flying a mission from Charleston AFB, SC to Ramstein AB, Germany.

Military Airlift Command. Located at Scott, Air Force Base Illinois was deactivated on June 1, 1992. It was replaced by Air Mobility Command.

Restrictive modification. When a wide body aircraft is enhanced and the aircraft will carry cargo for a profit, the government will only pay 50 per cent of the modification cost. Because the airline intends to use the aircraft in a cargo configuration, the modification is called a restrictive mod.

War Air Service Program (WASP). WASP allocates air carriers in times of extreme national emergency and goes well beyond the CRAF program. It addresses the nation's total transportation needs during an all-out war, when most of the country's industrial production must support the war effort.

APPENDIX B

TABLES

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Table 1.--CIVIL RESERVE AIR FLEET (CRAF)

SEGMENT	CARGO	PAX	STAGES		
			I	II	III
DOMESTIC					
12 B727-100C/F, 5 DC9-33F	35			35	35
16 L 100(L382), 2 CV-600/640					
ALASKAN					
1 B737-200C/F, 2 DC-9-33F	8			8	8
1DHC7-103, 2 C/V-600/640					
2 L100(L362)					
SHORT RANGE INTERNATIONAL					
2 B727-100C/F, 5 B737-200CF	7	26		23	33
26 B727-100/200					
LONG RANGE INTERANTIONAL PAX					
11 DC8, 23 A310-200/300		256	18	73	26
13 B747-SP, 107 B747 100/200/4					
27 DC10-10, 22 DC10-30					
20 DC10-40, 19 L1011-50					
10 L1011-100, 4 L1011-500					
LONG RANGE INTERNATIONAL CARGO					
62 DC8-50/60/70C/F	150		23	41	150
11 B747-300C/F, 14 B747-100F					
18 B747-200F, 5 B747-200C					
1 DC10-10C/F, 25 DC10-30C/F					
AEROMEDICAL					
2 MD-81, 3 MD-82, 28 B767-200					33
CRAF TOTAL			41	180	515

Source: Headquarters Military Airlift Command form 312,
Civil Reserve Air Fleet (CRAF) Capability Summary, 1 April
1992.

Table 2.--CRAF ENHANCED CONTRACT COST

CARRIER	AIRCRAFT	TYPE MOD	COST	DELIVERY DATE
United	1 DC-10-10	Restricted	\$15.8M	Sept 82
Pan Am	19 B-747s	Restricted	\$570M	Feb 83
Federal Express	1 DC-10-30	Unrestricted	\$4.3M	Sept 87
Evergreen	2 B-747s	Unrestricted	\$9.8M	Nov 89
<u>Evergreen</u>	<u>1 B-747-100</u>	<u>Unrestricted</u>	<u>\$2.9M</u>	<u>Mar 91</u>
TOTAL COST OF ENHANCEMENTS			\$602.8	

Source: Ron Priddy, Colonel, USAF, CRAF Office, Historical Data from Contracts, HQ Military Airlift Command, Scott Air Force Base, IL, 1990 - 1992.

Restricted Mods:

A passenger aircraft is modified to accept the military cargo handling system. However, the carrier agrees to operate the aircraft in the passenger mode and not the cargo mode. For this, the government pays all costs associated with the modification. This includes downtime, ferry, and modification costs as well as the additional operating cost of operating a heavier aircraft.

Unrestricted Mods:

A passenger or new cargo aircraft is modified to accept the military cargo handling system. Because the carrier will operate the aircraft in the freighter configuration, the DOD pays only one-half of the total conversion cost and none of the additional operating cost.

Table 3.--FEDERAL CONTROL OF RAILROADS

Company	Executive Order	Possession Date	Relinquish Date	Type Control
Toledo, Peoria & Western Federal Railroad operation	9108	Mar 21, 1942	Oct 1, 1945	direct
American Railroad contract of Porto Rico	9341	May 13, 1943	Jul 1, 1944	management
Illinois Central Railway System contract	9602	Aug 23, 1945	May 17, 1946	management
Principal railroads of the contract United States (general strike)	9727	May 17, 1946	May 27, 1946	management
Monongahela Connecting contract Railroad	9736	Jun 14, 1946	Aug 12, 1946	management

Source: Office of Defense Transportation, Civilian War Transportation (Washington: U.S. Government Printing Office, 1948). page 269.

Table 4.--RATES OF RETURN ON INVESTMENT, 1921-57

Year	Rate of Return on	
	Net Investment	Net Investment
1921-25	\$20,778,000	4.25
1926-30	\$23,221,000	4.80
1931-35	\$23,568,000	1.94
1936-40	\$23,088,000	2.51
1941-45	\$23,329,000	4.97
1946	\$22,578,000	2.75
1947	\$22,720,000	3.44
1948	\$23,258,000	4.31
1949	\$23,826,000	3.13
1950	\$24,310,000	4.28
1951	\$25,055,000	3.76
1952	\$25,891,000	4.16
1953	\$26,467,000	4.19
1954	\$26,670,000	3.28
1955	\$26,761,000	4.22
1956	\$27,013,000	3.95
1957	\$27,440,000	3.36

Source: American Association of Railroads, A Statistical Record, 1921-55 (December 1955), 6-7. 1956 figures are ICC averages for beginning and ending year figures. 1957 figures are ICC averages for beginning year figures.

Table 5.--RAIL FREIGHT TRAFFIC, 1926-57

Year	Rail Freight Traffic		Total Intercity Freight Traffic, Public & Private		Rail Share (percent)
	Billions of Revenue Ton-Miles	Index 1926=100	Billions of Ton-Miles	Index 1926=100	
1926.....	452.3	100.0	590.8	100.0	76.56
1928.....	440.7	97.4	581.0	98.3	75.85
1930.....	389.6	86.1	524.3	88.7	74.31
1932.....	237.6	52.5	319.9	54.1	74.27
1934.....	272.9	60.3	385.5	65.3	70.79
1936.....	344.6	76.2	518.1	87.7	66.51
1938.....	294.8	65.2	453.6	76.8	64.99
1940.....	379.2	83.8	618.6	104.7	61.30
1942.....	645.4	142.7	929.0	157.2	69.47
1944.....	746.9	165.1	1,088.3	184.2	68.63
1946.....	602.1	133.1	903.9	153.0	66.61
1948.....	647.3	143.1	1,045.0	176.9	61.94
1950.....	596.9	132.0	1,062.6	179.9	56.17
1952.....	623.4	137.8	1,144.3	193.7	54.48
1954.....	556.6	123.1	1,124.5	190.3	49.50
1956.....	655.9	145.0	1,360.1	230.2	48.22
1957.....	626.2	138.4	1,352.1	228.9	46.31
(1957 data are preliminary)					

Source: James C. Nelson, Railroad Transportation and Public Policy (Washington: The Brookings Institution, 1959), 10.

APPENDIX C
CRAF PARTICIPANTS

Air Trans International
Aloha Airlines
American Airlines
American International
American Trans Air
America West
Arrow Air
Buffalo Airway
Continental
Delta Airlines
Emery
Evergreen International Airlines
Express One
Federal Express
Florida West
Hawaiian Air Lines
Key Airlines
Kitty Hawk
Markair
Northern air Cargo
Northwest Airlines
Rich International Airlines
Reeve Aleutian
Southern Air Transport
Sun Country
Trans World Airlines
Tower Air
United Airlines
United Parcel Service
USAIR
World Airways

BIBLIOGRAPHY

Books

Davies, R.E.G. Airlines of the United States Since 1914, London:Putnam & Company, 1972.

Hines, Walker D. War History of American Railroads, New Haven: Yale University Press. 1928.

Hungerford, Edward. Transport for War, New York:E.P. Dutton & Co., Inc.. 1943.

Martin, Albro Enterprise Denied, New York:Columbia University Press, 1971.

Merritt, Hardy L. and Carter, Luther F. Mobilization and the National Defense, Washington: National Defense University Press, 1985.

Nelson, James C. Railroad Transportation and Public Policy, Washington: The Brookings Institute, 1959.

Office of Defense Transportation, Civilian War Transportation. Washington: U.S. Government Printing Office, 1948.

Rose, Joseph R. American Wartime Transportation, New York:Thomas Y. Crowell Company, 1953.

Stover, John F. American Railroads, Chicago:University of Chicago, 1961.

Williams, Ernst F. Jr. The Regulation of Rail-Motor Rate Competition. 1958.

Periodicals and Articles

Bond, David F. "MAC Faces Widening Gap In Peacetime, Crisis Needs," Aviation Week and Space Technology, September 9, 1991.

- Clement. M.W. "Railroads Wartime Role," Army Transport Journal. Washington:Army Transportation Association. September-October 1947.
- Faricy. William T. "Railroads," Army Transportation Journal. Washington:Army Transportation Association, May-June 1947.
- Henry, Robert S. "Highballing Through War," Nation's Business, Washington:Chamber of Commerce of the United States, October 1945.
- Military Airlift Command Public Affairs Office "Shrinking Incentives for Airlines Pose Problems for CRAF Program," Aviation Week and Space Technology, September 9, 1991.
- Ott, James "U.S. Carriers Want Changes In Military Airlift Program." Aviation Week & Space Technology. October 15, 1990.
- Pelley, John J. "What About the Railroads?," Army Transportation Journal. Washington:Army Transportation Association, April 1945.
- Randal, G.C. "Rail Transport," Army Transport Journal, Washington:Army Transportation Association, August 1945.
- Snell, Hampton K. "What About Tomorrow," Army Transport Journal, Washington:Army Transportation Association, 1945.
- Tuck, Paul D. Lessons Learned During Desert Shield/ Storm Through Activation of the CRAF, SAE Technical Paper Series, Dayton OH, 1992.

Government Publications

- Congress, United States House of Representatives, Subcommittee on Public Works And Transportation, Civil Reserve Air Fleet (CRAF): Hearing before the Subcommittee on Investigations and Oversight Committee on Public Works And Transportation, 101st Cong., 2nd sess.. 10 October 1990.
- Farmers Grain Co. et al. v. Toledo, Peoria & Western Railroad et al., Federal Supplement 66, St Paul:West Publishing Co., 1946.

Toledo. Peoria & Western Railroad v. Stover et al.. Federal Supplement 60. St Paul:West Publishing Co., 1945.

Unpublished Material

Bates. James Major, USAF, Public Affairs Office Headquarters AMC. Airlift Historical Data. Scott AFB, IL, 1990-1992.

Fraley, Tom Major, USAF, interview by James H. Rainey, Major. USAF, 13 September 1990, Personal interview, Scott Air Force Base, IL.

Priddy, Ronald Colonel, USAF, interview by James H. Rainey, Major, USAF, 13 September 1990, Personal interview, Scott Air Force Base, IL.

Rainey, James H. Capt, USAF, US Carriers Want Changes in CRAF, Point Paper, Hq USAF/LGTX, Washington DC, 1990.

Treitz, Greg, Mobilization Representative for United Parcel Service, interview by James H. Rainey, Major, USAF, September 22, 1993, Telephone interview, Louisville, KY.

Other Sources

Drach, Ann K. Can the Civil Reserve Air Fleet Fulfill Its Strategic Airlift Role, Naval War College Newport RI, 1988.

Foster, Hassebrock, and Mahboob A Study to Determine the Role of Competition in Contracting for the Movement of Air Freight within the Domestic Market, Air Force Institute of Technology Wright-Patterson AFB OH, School of Systems and Logistics, 1980.

Gilstad. Claire J. The Effect of Airline Merger Activity on the CRAF, Industrial College of the Armed Forces, Washington DC, 1987.

Gutierrez, Marie J. The Need For a Revised Airlift Policy, Air Command and Staff College. Maxwell AFB AL, 1983.

Kahley, Mark A. CRAF - Readiness Requirements for the Airlift System, Air Command and Staff College, Maxwell AFB AL. 1986.

Logistics Capability Measurement System: Task 4 - CRAF Quick Response Model Application, Synergy Inc., Washington DC, 1989.

Morris, Stephen H. CRAF: Capabilities and Limitations in Support of National Security, Naval War College, Newport RI, 1989.

Schwartz, Beyer, McNee, Smith and Ciuccib. Review of DOD's Strategic Mobility Programs Civil Reserve Air Fleet, Logistics Management Institute Bethesda, Md, 1991.

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