

HALF A MILLION TONS AND A GOAT:
A STUDY OF BRITISH PARTICIPATION IN THE BERLIN AIRLIFT
25 JUNE 1948 - 12 MAY 1949

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ABSTRACT

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Half a Million Tons and a Goat: A Study of British Participation in the Berlin Airlift 25 June 1948 - 12 May 1949

The Soviet blockade of western Berlin between the 23 June 1948 and 12 May 1949 - and the airlift that was organized to defeat it - was the first major confrontation between the Soviet Bloc on the one side and the United States and its allies on the other. It was at the point where the shared cooperation arising from common interests during the Second World War finally dissolved and became the Cold War with the potential to develop into a hot war. Yet for all its acknowledged importance in the history of the Cold War, no historian has hitherto investigated the British component of the Berlin Airlift to discover how it worked in practice and if British involvement was actually necessary to the success of the Allied operation as a whole, or whether the Airlift could have been undertaken more effectively by different approach.

Given its acknowledged importance, the Airlift has been poorly served by its historiography. It forms a very minor part in the post-war histories of Germany; and even in the more specialist scholarly literature on the early stages of the Cold War, it receives scant attention. Insofar as it has received any detailed scrutiny, the Airlift of 1948-9 is presented regularly as a sub-plot in the wider drama of the Berlin Blockade, and it is the US dimension of the Airlift which has produced the best historiography. The American aspect, Operation VITTLES, predominates in the current literature and there is no equivalent on the RAF side to the USAF professional historians' output. Beyond this US dimension, there is a general dearth of academic papers in journals and of scholarly monographs. Popular books exist in quantity providing narrative overviews for the general public but this literature can be based on assumptions about the British dimension to the Airlift that do not stand up when tested against the surviving evidence.

This study seeks to address its principal questions - examining the scale and extent of the British participation, and gauging its utility and significance in

relation to the broader multi-national endeavour to defeat the Blockade - by a close study of the rich and plentiful primary archival sources held in Britain, the United States and elsewhere using the combined methodologies of the historian and the logistician. The thesis evaluates British participation in the Berlin Airlift and reveals that her aircraft were demonstrably indispensable logistically. However, performance - and that of the Royal Air Force especially - was substantially lower than that of the American task force. At the time, the official explanation given to the public was that the USA operated more and larger aircraft. The thesis reveals that there were additional causes. It examines how the Americans might have replaced the British, as was feared within the Foreign Office and the RAF and as they had the French. Redistribution of the whole American task force to bases nearer to Berlin in the British Zone of Germany would have increased the tonnage delivered but the thesis finds it would not have been sufficient. Deploying more US resources is the other possibility investigated and the limitations of American capability to do so are revealed and the potential impact on the plans to continue the Airlift into 1951 identified.

ACKNOWLEDGEMENTS

My sincere thanks to my wife Sue for her support; to Professors John Adamson and Gwythian Prins - my supervisor - of the University of Buckingham, and to all the people, archives and libraries that have helped my research. Whilst in no way slighting the many not mentioned, I would like to thank the Hertfordshire Library for obtaining so many secondary sources; American, Canadian and German archives for supporting my research remotely; AFHRA, the Library of Congress, the NHHHC and the US National Archives for assisting a stray "Brit" through their systems; the Landesarchiv Berlin, DORIS at the Royal Air Force Museum Hendon and the Imperial War Museum for allowing me to use their photographs, and Dr Roger Miller for helping to ease me into researching the Berlin Airlift in the USA. Finally I was allowed access to several military facilities in the UK and the USA and I would like to thank all those who made that possible.

ABBREVIATIONS, ACRONYMS AND GLOSSARY

This section provides an abbreviations index and a glossary of terms.

ABBREVIATIONS AND ACRONYMS

1st ALTF: First [US] Airlift Task Force. The American component of the Berlin Airlift - Operation VITTLES.

AATO: [British] Army Air Transport Organization. The American equivalent in the Airlift was the United States Army Airlift Support Command [USAASC].

ACAS(Ops): Assistant Chief of the Air Staff (Operations) - RAF appointment.

ACC: Allied Control Council of Germany.

ACSEA: Air Command South East Asia.

ACM: Air Chief Marshal - "4 star" rank.

AFB: [US] Air Force Base.

AFHRA: [US] Air Force Historical Research Agency, Maxwell Air Force Base [AFB].

AHB: Air Historical Branch. To ease tracking in the Bibliography there will be no differentiation between when the branch was a component of the Air Ministry and when of the Ministry of Defence.

Air Cdre: Air Commodore - "1 star" rank.

Air Mshl: Air Marshal - "3 star" rank.

ALREP: Daily Airlift Situation Report [SITREP] raised in Berlin.

AM: [British] Air Ministry, used in references.

AMSO: Air Member for Supply and Organization - RAF appointment but not filled by a supply specialist in spite of the title.

AOC: Air Officer Commanding - RAF appointment.

AOC-in-C: Air Officer Commanding in Chief -RAF appointment.

AOG: Aircraft on the ground unserviceable awaiting spares

AP: Air Publication, RAF manual.

App.: Appendix, used in references.

ATC: [US] Air Transport Command.

AVGAS: Aviation gasoline.

AVM: Air Vice Marshal - "2 star" rank.

BAFO: British Air Forces of Occupation (Germany).

BAOR: British Army of the Rhine.

BEA: British European Airways.

Brig: Brigadier - "1 star" rank.

Brig Gen: Brigadier General - "1 star" rank.

CAATO: Commander Army Air Transport Organization.

CALTF: Combined Airlift Task Force.

CCG: Control Commission for Germany.

CCTF: Combat Cargo Task Force.

CFM: Council of Foreign Ministers.

CG: Commanding General - USAF and USAAF usage.

C-in-C: Commander in Chief.

Col: Colonel - rank.

DCAS: Deputy Chief of the Air Staff - RAF appointment.

DDASTO: Deputy Director of Air Support and Transport Operations - RAF appointment.

EAC: Eastern Air Command - Anglo-American Command in the SEAC

during the Second World War.

FO: Foreign Office.

FY: Fiscal Year.

Gen: General - "4 star" rank.

GOC: General Officer Commanding - British Army.

Gp.: RAF group as in No. 46 Gp.

Gp Capt: Group Captain - rank.

HMG: His or Her Majesty's Government.

HMSO: His or Her Majesty's Stationery Office.

HQ: Headquarters.

IFR: Instrument flight rules as opposed to Visual flight rules.

IWM: Imperial War Museum, used in references.

JCS: US Joint Chiefs of Staff.

JSP: Joint Service Publication, British Services manual.

KPD: Communist Party - German political party.

LoC: Library of Congress, used in references.

Lt Col: Lieutenant Colonel - rank.

Lt Gen: Lieutenant General - "3 star" rank.

Maj: Major - rank.

Maj Gen: Major General - "2 star" rank.

MATS: US Department of Defense Military Air Transport Service.

MOD: Ministry of Defence, used in references.

MRAF: Marshal of the Royal Air Force - "5 star" rank.

NATO: North Atlantic Treaty Organization.

NHHC: The [US] Naval History and Heritage Command, Washington Navy Yard DC, used in references.

No.: as in No. 229 Gp.

ORB: [RAF] Operation Record Book.

PSP: Pieced steel plank.

RAAF: Royal Australian Air Force.

RAF: Royal Air Force.

RASO: [AATO] Rear Airfield Supply Organization.

RCAF: Royal Canadian Air Force.

RLC: Royal Logistic Corps.

RNAF: Royal Netherlands Air Force.

RNZAF: Royal New Zealand Air Force.

SAAF: South African Air Force.

SAC: [US] Strategic Air Command.

SASO: Senior Air Staff Officer - RAF appointment.

SEAC: South East Asia Command.

SITREP: Situation Report.

SMA: Soviet Military Administration.

SOPs: Standard operating procedures. Prescribed, detailed, written instructions to be followed to achieve uniform performance of a specific function.¹

SPD: Social Democrat Party - German political party.

¹ For example, in JCS, [US] *Joint Publication 3-31, Command and Control for Joint Land Operations*, 2014, Part II - Terms and Definitions.

Sqn: Squadron.

Sqn Ldr: Squadron Leader - rank.

TC: Transport Command - RAF.

TCC: Specifically the EAC integrated Troop Carrier Command.

TNA: The [British] National Archives, used in references.

USAAF: United States Army Air Forces.

USAF: United States Air Force.

USAFE: United States Air Forces in Europe.

USN: United States Navy.

USNA: US National Archives and Records, used in references.

VCAS: Vice Chief of the Air Staff - RAF appointment.

VHT: Very heavy transport aircraft, essentially the planned US replacements for the Douglas Skymaster in the strategic role.²

WO: War Office, used in references.

CONVENTIONS

Where ranks and titles are used they are those which were held at the time of the event.

The Joint Service military approach (JSP101) applies when abbreviations are used in the thesis rather than that pertaining at the time. For example, HQ BAFO would have been written as H.Q. B.A.F.O. German locations such as RAF Station Lubeck, Luebeck or Lübeck will conform wherever possible to the representation in *AP3257 A Report on Operation PLAINFARE*.

Anglicization of less common Russian place names and transliteration of

² Abbreviation used by Tunner and Williams - TNA, AIR 2/10064, E.172 Williams 21 April 1949 and E.174 Tunner undated.

Cyrillic script have also led to various spellings, for example Erickson used 'Schlusselburg', Adams 'Schluesselburg' (in his translation of Pavlov) and Glantz 'Shlissel'burg'. In each instance a single form is selected and employed throughout the thesis.

"Blockade" and "Airlift" with a capital letter are used specifically for the Berlin Blockade and Berlin Airlift. When used without a capital letter they apply to other blockades and airlifts. Eastern, East, Western and West with a capital letter are used for political divisions whilst eastern, east, western and west without a capital letter describe geographic locations, for example West Germany is the Federal Republic but western Germany was the three zones occupied by the Western Powers. Britain is employed rather than the United Kingdom as it is closer to Great Britain and England which were in common application in the late 1940s. On the other hand, Soviet is employed rather than Russian although the latter was common at the time. (After all, Stalin came from Georgia).

GLOSSARY OF TERMS

Airborne: US *Field Manual 101-5-1* gave four definitions for the term: '1. In relation to personnel, troops especially trained to effect, following transport by air, an assault debarkation, either by parachuting or touchdown. 2. In relation to equipment, pieces of equipment that have been especially designed for use by airborne troops during or after an assault debarkation. It also designates some aeronautical equipment used to accomplish a particular mission. 3. When applied to materiel, items that form an integral part of the aircraft. 4. The state of an aircraft, from the instant it becomes entirely sustained by air until it ceases to be so sustained.'³ In the thesis "Airborne" (with a capital A) will be used in relation to "Airborne assaults" - which are carried out by "Airborne Forces" such as the as the US 101st Airborne Division. "airborne" (with a lower case a) will be used when the meaning is that an aircraft or its

³ Headquarters, Department of the Army, *Field Manual 101-5-1, Operational Terms and Graphics* <www.fas.org/man/dod-101/army/docs/fm101-5-1/f545-a.htm> [accessed 17 June 2013] (Chap. 1).

cargo is in the air.

Halifax: The Handley Page Halifax was still being used by the RAF as well as by civilian companies as a transport when the Berlin Airlift started. Large numbers had been disposed of and civilianized in varying degrees. 14 were modified extensively as passenger liners of which 12 had been used by BOAC and called Haltons. Berlin Airlift primary and secondary sources interchanged the names.⁴ Halifax is used throughout the thesis.

Logistics: The meaning of the term logistics has changed during the last 140 years and it now has both military and civilian applications. Both Irving Holley and Martin Van Creveld cited Baron Antoine-Henri Jomini's definition in *The Art of War*: 'the practical art of moving armies'.⁵ The Royal Logistic Corps [RLC] describes its role as getting the 'right kit to the right people in the right place at the right time' and acknowledges that by so doing it boosts morale.⁶ The 2010 *Oxford Dictionary of English* included a civilian definition: 'the commercial activity of transporting goods to customers'.⁷ The long processions of trucks running nose to tail found daily on Britain's motorways provides a similar picture to what the Americans and British wanted to achieve in the air corridors over eastern Germany during the Berlin Airlift. However, like the RLC, timely delivery of what is needed in the quantities necessary is an imperative. It is to encapsulate this concept of timely delivery of what is needed that the term "logistics" is used in the thesis.

⁴ Anon, 'The Dropzone', Harrington Aviation Museum Society newsletter, Vol. 6 Issue 2, July 2008, <www.harringtonmuseum.org.uk> [accessed 12 April 2012] (pp. 14-16); John Provan and R.E.G. Davies, *Berlin Airlift: The Effort and the Aircraft* (McLean VA: Paladwr Press, 1998) p. 49.

⁵ I. B. Holley Jr., *Ideas and Weapons*, Air Force History and Museums Program (New York: Yale University Press, 1953, reprinted under Air Force History and Museums Program, 1997) p. 12; Martin Van Creveld, *Supplying War: Logistics from Wallenstein to Patton*, 2nd edn. (New York: Cambridge University Press, 2004 [1st edn. published 1977]) p. 1.

⁶ British Army, 'Royal Logistic Corps', *Corps and Regiments* <www.army.mod.uk/rlc/logistic.aspx> [accessed 7 Mar 2012].

⁷ Angus Stevenson, ed., *Oxford Dictionary of English*, 3rd edn. (Oxford: Oxford University Press, 2010).

Skymaster: The Douglas DC-4 family included DC-4 civil transports and military ones termed by the US Air Force as C-54s and by the Navy, Marine Corps and Coast Guard as R5Ds. The name Skymaster was also used for the military aircraft. Skymaster is used in the thesis when it is not necessary to be specific.

Wing: In the United States Army Air Forces and United States Air Force application it was the headquarters organization commanding subordinate units which were mostly groups but sometimes squadrons and flights. Normally flights were parts of a squadron and squadrons were allocated to groups. In RAF parlance the hierarchy was in descending order: groups, wings, squadrons, flights.

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DECLARATION

This thesis is the result of my own work and includes nothing which is the outcome of work done in collaboration, and is not the same as any that I have submitted, or, is concurrently submitted for a degree or diploma or other qualification at the University of Buckingham or any other University or similar institution. I further state that no part of my thesis has already been submitted, or is concurrently submitted for any such degree, diploma, or other qualification at the University of Buckingham or any other University or similar institution.

PHOTOGRAPHS

There are three sets of photographs. The first covers the leading politicians, military governors and the air commanders referred to in the thesis. The second shows the major aircraft types mentioned in the thesis in connection with the Berlin Airlift. The third set comprises photographs which reinforce Chapters 5 and 6 by showing the difficulties of loading and unloading aircraft used during the Berlin Airlift.

Photographs 1 to 18 are not included in the Portable Document Format [.pdf] copy of the thesis.

CHAPTER 1:

INTRODUCTION

The Soviet blockade of western Berlin between the 23 June 1948 and 12 May 1949 was the first major confrontation between the Soviet Bloc on the one side and the United States and its allies on the other. It was at the point where the shared cooperation that had arisen from mutual interest during the Second World War finally metamorphosed into the Cold War – a conflict which always had the potential of developing into a hot war. As Alexander Solzhenitsyn would record sixty years later: 'You [the Western allies], in 1948, defended Berlin only by your firmness of spirit and there was no world conflict'.¹ The threat posed to the stability of Europe by the Blockade was summed up at the time by Ernest Bevin: 'The Abandonment of Berlin would mean the Loss of Western Europe'² whilst the importance of its counter, the Airlift, was encapsulated in 1949 by Dudley Barker writing on behalf of the Air Ministry and comparing the Airlift's significance with the Battle of Britain:

The impact on history of that show of Anglo-American air power over Europe in the Summer of 1948 was probably as significant as that of the RAF's victory in the English skies in the summer of 1940.³

In 1948, when faced with limited options that did not risk armed conflict or acquiescing to uncertain Soviet demands, the Western Powers elected to supply their sectors via the three air corridors that had been established in late 1945. In reaching that decision, the British and American politicians and their senior military advisors

¹ Aleksandr I. Solzhenitsyn, *Détente, Democracy, and Dictatorship* (Piscataway, NJ: Transaction Publishers, 2009) p. 51.

² Attributed to Bevin by Lew Douglas, American Ambassador in London and quoted by Alan Bullock, *Ernest Bevin - Foreign Secretary 1945-1951* (Oxford: Oxford University Press, 1985) pp. 576, 588; Peter Hennessy, *Never Again: Britain 1945-1951* (London: Penguin, 2006) pp. 575-576; Daniel Yergin, *Shattered Peace: the origins of the cold war and the national security state* (London: Deutsch, 1978) p. 377. The Bevin phraseology recorded by sources was slightly different and it is probable that the quotation provided the sense of Bevin's statement not the precise words.

³ Dudley Barker, [produced for the Air Ministry and the Central Office of Information] *Berlin Airlift: An account of the British Contribution* (London: HMSO, 1949) p. 6. Barkers' *Berlin Airlift* was sold to the general public at the time for 1/6d.

did not perceive an airbridge⁴ that could sustain the population of western Berlin indefinitely; rather it was to be the means to augment the stocks already held in the City thereby gaining time for Four-Power negotiations to lead speedily to the reopening of surface communications. In the event, the Blockade was not lifted until 0001 hours on 12 May 1949 by when the Airlift had been progressively reinforced by the Americans to a level where it was sustaining western Berlin, albeit at an austere level.⁵

The possible implications of the Airlift's failure were regularly confronted on the Western allies' side by contemporary political leaders. Had the Airlift not been mounted, or had it failed, the counter-factual possibilities which they contemplated could have included all of Berlin coming into the Soviet orbit and over time Germany becoming reunited under pro-Moscow communist rule. Other eventualities that were contemplated included the possibility that the US might have withdrawn from Europe; NATO might not have been formed, and without a thriving West Germany the remainder of western Europe might not have recovered economically.⁶

⁴ In this case, aircraft flying over the Soviet Zone of occupation in eastern Germany between bases in the British and American Zones in western Germany and airfields in the British and American Sectors in Berlin. During the Blockade, a further airfield was built in the French Sector.

⁵ Bullock, pp. 575, 577, 589; Sean Greenwood, *Britain and the Cold War 1945-91* (Basingstoke: Macmillan Press, 2000) p. 64; Daniel F. Harrington, *Berlin on the Brink: the Blockade, the Airlift and the early Cold War* (Lexington KY: The University Press of Kentucky, 2012) Chaps: 3-6, p. 295; Daniel F. Harrington, 'The Berlin Blockade Revisited', *The International History Review*, Vol. VI, No. 1, February 1984, p. 99; HQ BAFO, *AP3257 A Report on Operation PLAINFARE (The Berlin Airlift) 25th June 1948 - 6th October 1949* (Bielefeld: Control Commission, 1950) pp. 4, 148; Roger G. Miller, *To Save a City: The Berlin Airlift 1948-1949*, Air Force History and Museums Program (Texas A&M University Press, 2000) pp. 32-34, 81-86; Helena P. Schrader, *The Blockade Breakers: the Berlin Airlift* (Stroud: The History Press, 2010) Chaps: 3-4; Avi Shlaim, 'Britain, the Berlin Blockade and the Cold War', *International Affairs* (Royal Institute of International Affairs 1944-) Vol. 60, No. 1, Winter 1983-1984, pp. 4-6; Ann and John Tusa, *The Berlin Airlift* (Staplehurst: Spellmount, 1998) Chaps. 13-14; Yergin, pp. 382-386.

⁶ Bullock, pp. 576-578, 584-6, 589; Hennessy, *Never Again*, pp. 252-254, 297, 348-349; Harrington, 'The Berlin Blockade Revisited', p. 108; Wilfried Loth, trans. Robert F. Hogg, *Stalin's Unwanted Child: The Soviet Union, the German Question and the Founding of the GDR* (Basingstoke: Macmillan Press, 1998) pp. 84-94; Frank Roberts, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989) pp. 39-40, 42-43, 74-76; Schrader, p. 254; Shlaim, 'Britain, the Berlin Blockade', pp. 13-14; TNA, FO 800/467, Private papers of Mr Ernest Bevin: Germany: 1948-1951; Tusas, p. 322; Yergin, p. 376; Vladislav M. Zubok, A Footnote continues on next page.

Thus the Blockade was a watershed for Europe and the success of the Airlift became a symbol of hope for Western Europe - a practical manifestation of the West's resolve not to allow the Soviets to move beyond existing borders and areas of influence.⁷ Together the two events - the Blockade and the Airlift - formed an important geopolitical event.

Authors appear to have had difficulty finding a single word to encapsulate the achievement of the Airlift. 'Victory'⁸ has Cold War connotations and 'success'⁹ is not entirely accurate either. Norman Stone proposed that after the Blockade and until the Wall was built Berlin provided an escape route for East Germans and it was 'in that sense the West had won'.¹⁰ Helena Schrader wrote that 'the Berlin Airlift had played a critical role in keeping the US engaged in Europe and enabling West Germany to become a powerful and prosperous country. Without both these factors, especially West German economic recovery and the coveted DM, the revolution in East Germany would not have taken place. Consequently, the Airlift was again perceived as being on the "right" side of history.'¹¹ Certainly the events between 1989 and 1994 could justify the view that eventually the West won but that was not the situation in 1949 when after the withdrawal of the Blockade (and really only the partial withdrawal) Berlin was not reunited and there remained no certainty of surface access. It was more the case that the Anglo-Franco-American grouping and the western Berliners did not lose. Moreover, as Chapters 5 and 6 will show, in the late spring and early summer of 1949, whilst the Anglo-American Airlift was delivering sufficient to sustain western Berlin at an austere level and displayed a potential to continue to do so, the situation was not truly certain. A severe winter

Failed Empire: the Soviet Union in the Cold War from Stalin to Gorbachev (Chapel Hill : University of North Carolina Press, 2007) pp. 76-77.

⁷ Daniel L. Haulman, *Wings of Hope: The U.S. Air Force and Humanitarian Airlift Operations* ([detail about publisher not provided] Air Force History and Museums Program, Air Force Fiftieth Anniversary Commemorative Edition: 1997) p. 4.

⁸ Arthur Percy, *Berlin Airlift*, (Shrewsbury: Airline, 1997) p. 111; Robert Rodrigo, *Berlin Airlift* (London: Cassell, 1960) p. 6.

⁹ Richard H. Immerman and Petra Goedde, eds., *The Oxford Handbook of the Cold War* (Oxford: Oxford University Press, 2013) p. 6.

¹⁰ Norman Stone, *The Atlantic and its Enemies: A History of the Cold War* (London: Penguin, 2011) pp. 67, 192.

¹¹ Schrader, p. 254.

rather than the repeat of the mild one of 1948/9 might have changed the positive perception. This, then, is what success meant and how it is used in the thesis.

HISTORIOGRAPHY OF THE AIRLIFT

The Airlift inhabits a number of historiographies and in most of them is ill served or poorly served as will be now shown. The Airlift is part of the 1948-1949 Blockade of Berlin which in turn forms an event in both the histories of Germany and the Cold War. It attracts little attention in the German history where Mary Fulbrook's *History of Germany 1918-2000: The Divided Nation*, for example, gave it just four sentences in its 337 pages including incorrectly informing its readers that 'the Western powers flew supplies into Berlin by air routes, dropping food to Berliners from so-called "raisin bombers"'. In fact, food was not dropped during the Airlift, although showering sweets for children became a successful publicity ploy.¹² Wilfried Loth's 1998 *Stalin's Unwanted Child* accorded the Blockade 14 pages out of a body of 185 pages, but only one page to the Airlift.¹³ Likewise, Anthony Glees's 1996 *Reinventing Germany: German Political Development since 1945* allocated a total of one page out of a body of 279 to the Airlift.¹⁴ Eric Morris's 1973 *Blockade: Berlin and the Cold War* had a narrower agenda and shorter time span: 1942 to 1971. In 31 pages from a body of 247, ranging from less than a sentence per page to dedicated pages, it provided an overview of the Airlift but one which lacked source referencing and had only a one page bibliography of published secondary sources.¹⁵

Emphasis, moreover, is on the American effort; indeed as the following examples show, British participation can be either overlooked or buried in the narrative. *The Oxford Handbook of the Cold War* in 2013 accorded the Airlift eight sentences and in its 'Introduction' questionably attributed the Blockade to the currency reform in the

¹² Mary Fulbrook, *History of Germany 1918-2000: The Divided Nation*, 2nd edn. (Oxford: Blackwell Publishing, 2002) p. 133; William H. Tunner, *Over the Hump* (Washington DC, US Government Printing Office, 1985 reprint [originally printed 1964]) pp. 207-208.

¹³ See footnote 6: Loth, *Stalin's Unwanted Child: The Soviet Union, the German Question and the Founding of the GDR*.

¹⁴ Anthony Glees, *Reinventing Germany: German Political Development since 1945* (Oxford: Berg, 1996).

¹⁵ Eric Morris, [lecturer in the Department of War Studies at the Royal Military Academy Sandhurst] *Blockade: Berlin and the Cold War* (London: Hamish Hamilton, 1973).

western sectors of Berlin and wrote that 'the US Military responded with an airlift'.¹⁶ It is only in the body of the *Handbook* that mention is made of British participation: 'But American and British forces kept West Berlin going by airlifting in supplies.'¹⁷ Similarly, in *The Division of the World*, Wilfried Loth stated that: 'the American fighting forces immediately improvised an airlift to West Berlin' although subsequently writing: 'When the Western air fighting forces withstood the test of the winter', whilst Gerald Kleinfeld in *The Federal Republic of Germany at Forty* accorded the Airlift one sentence: 'The United States defended the Western position by mounting a massive airlift'.¹⁸

Of course, the Airlift has attracted the attentions of a number of writers, both popular and scholarly, in books about the Blockade and its subset the Airlift, spanning from Bennett's 1951 *Berlin Bastion*¹⁹ to Harrington's 2012 *Berlin on the Brink: the Blockade, the Airlift and the early Cold War*. Popular books vary from those covering the Blockade or the Airlift broadly to others that emphasize aspects such as the aircraft, the aircrews, the personalities, politics, the western Berliners and even the humour. They inform the general public. Even where a bibliography is provided, it seldom contains primary sources and rarely archival references.²⁰ Thus when a new fact or a different interpretation is presented, it is often not possible for the historical researcher to trace back to source which seriously limits the utility of

¹⁶ Immerman, and Goedde, pp. 5-6 (latter for quotation), 70, 161. See Chaps. 2 and 4 below.

¹⁷ Andreas Etges, 'Western Europe', in *The Oxford Handbook of the Cold War*, ed. by Richard H. Immerman, and Petra Goedde, (Oxford: Oxford University Press, 2013) p.161.

¹⁸ Gerald R. Kleinfeld, 'Chapter 1: The German Question, Yesterday and Tomorrow', in *The Federal Republic of Germany at Forty*, ed. by Peter H. Merkl (New York: New York University Press, 1989) p. 22; Wilfried Loth, *The Division of the World, 1941-1955* (London: Routledge, 1988) [no translator cited] pp. 203 and 209. Coverage of the Blockade by Loth was spread across 8 pages which concentrated on the political implications not the airpower or logistics considerations, with the Airlift being mentioned in four sentences.

¹⁹ Lowell Bennett, *Berlin Bastion* (Frankfurt: Fred Rudl, 1951).

²⁰ Robert Jackson, *The Berlin Airlift* (Wellingborough: Stephens, 1988) is an example of books which lacked both footnoting or endnoting and a bibliography. Jonathan Sutherland and Diane Canwell, *The Berlin Airlift: The Salvation of a City* (Barnsley: Pen and Sword, 2007) represented those without footnotes or endnotes but had a brief bibliography albeit without archival references. Schrader's *The Blockade Breakers* (2010) was an example of a third group which was lightly endnoted, included primary source material but had no archival references.

these works.

In the popular literature on the Airlift, and even in some of the scholarly work, mistakes of fact are repeated from one narrative to the next. An example of this is to imply that the Royal Canadian Air Force [RCAF] participated in the Airlift. In fact, the Canadian participation was confined to a number of Canadian nationals who served in the Royal Air Force [RAF] and possibly a few RCAF aircrew on exchange tours.²¹ The attempts to identify a single individual who conceived the Airlift provide a second example where errors have crept in. The Airlift evolved from extant plans to supply the Western garrisons and, as discussed above, it was intended to be just a temporary augmentation. Furthermore, the three Western powers were involved and multiple organizations - some with competence in air transportation - would have been exploring countermeasures to the Blockade. The suggestion that the Airlift was the idea of a single individual is implausible.²² A third example lies in attempts to explain the differences in performance between the RAF and the US 1st Airlift Task Force [1st ALTF] resulted from the former carrying freight that was more awkward to load rather than recognizing that by carrying such cargoes the Airlift was making best use of a known deficiency - the RAF's low rate of aircraft

²¹ RCAF, 'RCAF participates in the Berlin Airlift, providing West Berlin with food, medicine and essential goods' <www.rcaf-arc.forces.gc.ca/v2/hst/page-eng.asp?id=901> [last accessed 11 April 2013 and since removed]. See Brian Sutherland, [Canadian] Directorate of History and heritage, HistoryandHeritage-Histoireetpatrimoine@forces.gc.ca 18 April 2013 in Chap. 5 below. [Jonathan] Sutherland and Canwell, p. 137, for example, coupled the RCAF with the RAAF, RNZAF and SAAF thereby implying 'personnel' were provided specifically for the Airlift in the same way as the other air forces. They also wrote that the Commonwealth air forces provided unspecified 'equipment'. No footnotes or endnotes were provided to substantiate of either assertion.

²² For example the sponsors of a British candidate, Air Cdre Reginald Waite, included Richard Collier, *Bridge Across the Sky: The Berlin Airlift and Blockade, 1948-1949* (New York: McGraw-Hill, 1978) p. 55; Michael D. Haydock, *City Under Siege: The Berlin Blockade and Airlift, 1948-1949* (Washington DC: Brassey Batsford, 1999) pp. 143-144 (and Lt Gen Albert Wedemeyer, another contender, at p. 167); Hennessy, *Never Again*, p. 354; Wolfgang J. Huschke, *The Candy Bombers: The Berlin Airlift 1948/49: A History of the People and Planes* (Berlin: Metropol, 1999) p. 84; Romilly Waite, 'Air Commodore R.N. (Rex) Waite C.B., C.B.E., R.A.F' (The British Berlin Airlift Association) <pdf download from www.bbba-airlift.org.uk/page20.html> [accessed variously in February 2012].

See Chap. 3 below and Harrington's appraisal in *Berlin on the Brink*, Chap. 5.

utilization.²³

There are scholarly books. Walter Phillips Davison's *The Berlin Blockade: A Study in Cold War*²⁴ was a research study for RAND which gave detailed insight into the attitude of Berliners via contemporary and near-contemporaneous newspaper accounts, and Avi Shlaim's *The United States and the Berlin Blockade, 1948-1949 a Study in Crisis Decision-Making*²⁵ for the International Crisis Behaviour Project are early examples. However, both Davison and Shlaim reinforce the limitations of studying the Airlift via existing monographs; they addressed the wider topic of the Blockade which limited the breadth and depth of the Airlift content, and were of American orientation which affects both their use of British archival material and the priority they accord to covering British participation. Furthermore, they were produced during the Cold War and Daniel Harrington's caution that 'scholarly treatments of the Berlin blockade of 1948-9 have had difficulty escaping the shadow of the cold war' needs to be borne in mind throughout.²⁶ Indeed he specifically challenges the portrayal by Avi Shlaim of Harry Truman's dynamic leadership at the onset of the Blockade.²⁷

The United States Air Force [USAF]'s commitment to recording its history and the resources allocated for doing so,²⁸ together with the size and importance of its Air

²³ Sebastian Cox, 'Britain and the Berlin Airlift', *Royal Air Force Air Power Review*, Vol. 7, No. 1, Spring 2004, pp. 37-38; Jackson, pp. 142-144; John Tusa, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989) p. 36; Paul R. Wood, 'The Berlin Airlift', *Air Clues*, Vol. 33, No. 5, May 1979, p. 172; Paul R. Wood, 'Berlin Airlift Reconsidered: Problems and Success', *Air Clues*, Vol. 41, No. 7, July 1987, p. 269. See Chaps. 5 and 6 below.

²⁴ Walter Phillips Davison, for the RAND Corporation, *The Berlin Blockade: A Study in Cold War Politics* (New York: Arno Press, 1980).

²⁵ Avi Shlaim, *The United States and the Berlin Blockade, 1948-1949 a Study in Crisis Decision-making* (Berkeley CA: University of California Press, 1983).

²⁶ Harrington, 'The Berlin Blockade Revisited', p. 88. His full quotation was:

Historical accounts tend to reflect the time in which they are written, and scholarly treatments of the Berlin blockade of 1948-9 have had difficulty escaping the shadow of the cold war.

²⁷ Harrington, *Berlin on the Brink*, p. 102.

²⁸ USAF, 'Air Force History and Museums' <www.airforcehistory.af.mil/> [accessed variously 2010-2013].

Mobility Command - the Airlift's American descendant,²⁹ have resulted in literature about the Airlift by its professional in-house historians which is rigorous and often fully referenced.³⁰ The USAF History and Museums program 'is charged with the mission of preserving USAF history' which clearly sets out its priorities.³¹ Consequently, the Airlift narratives have concentrated on the American aspect, Operation VITTLES. That is not to say that the British component of the Airlift, Operation PLAINFARE, is not mentioned but it is in a subsidiary role.

Besides the literature published via US Government Agencies, there is Daniel Harrington's 2012 *Berlin on the Brink: the Blockade, the Airlift and the early Cold War* which has re-appraised the 'standard accounts'.³² It is American-centric and its 304 pages address much more than the Airlift; the 'Index' attributes 60 pages to the 'Berlin Airlift'. To emphasize succinctly its depth of research, the endnotes extend for a further 69 pages and its Bibliography for 21. Detail is not recorded, however, about the individual documents that were accessed in British archives other than when cited as references and just 32 pages address the British component of the Airlift with their content ranging from the majority of a page to single sentences.

²⁹ Christopher Bowie and James Ruehrmund, 'Arsenal of Airpower: USAF Aircraft Inventory 1950-2009', a Mitchell Institute Study November 2010 <www.afa.org/mitchell/reports/MS_TAI_1110.pdf> [accessed 5 April 2013]; Suzann Chapman, ed., 'The Air Force in Facts and Figures: 2011 USAF Almanac', *Air Force Magazine*, Vol. 94, No. 5, May 2011 <[www.airforcemag.com/MagazineArchive/Pages/2011/May %202011/0511cover.aspx](http://www.airforcemag.com/MagazineArchive/Pages/2011/May%202011/0511cover.aspx)> [accessed 4 April 2013]; USAF, *RefID: C-480AE32: United States Air Force FY 2013 Budget Overview*, generated on '2012Feb03 1511' (<www.saffm.hq.af.mil/shared/media/document/AFD-120209-052.pdf> [accessed 5 April 2013] ('Foreword' and pp. 31, 32, 51-53).

³⁰ Daniel F. Harrington, *The Air Force Can Deliver Anything: A History of the Berlin Airlift* (Ramstein AFB: USAFE History Office, 1998); Roger G. Miller, *To Save a City: The Berlin Airlift 1948-1949*, Air Force History and Museums Program (Washington DC: US Government, 1998) and in commercial version: Texas A&M University Press, 2000 (see footnote 5 above). In addition some of the wider ranging USAF monographs and papers have sections on the Airlift, for example: Theodore Joseph Crackel, *A History of the Civil Reserve Air Fleet*, Air Force History & Museums Program (Washington DC: US Government, 1998); Daniel L. Haulman, *The United States Air Force and Humanitarian Airlift Operations 1947-1994* (Washington DC: AFHRA, 1998).

³¹ USAF, 'Air Force History and Museums' <www.airforcehistory.af.mil/> [accessed variously 2010-2013].

³² The quotation is taken from the dust jacket of *Berlin on the Brink* published by The University Press of Kentucky, 2012; see footnote 5 above. At the time of publication Daniel Harrington was Deputy Command Historian at United States Strategic Command - a unified command not a USAF one.

The real puzzle is why the British involvement in the Berlin Airlift has attracted so little attention from British historians. There is no RAF equivalent of Harrington's or Miller's work. Ann and John Tusa's *The Berlin Airlift* covered the Blockade and its politics extensively and was well referenced. It was written just before the Berlin Wall came down³³ and therein lays a further potential limitation to studying the Airlift, which applies to both US and UK published sources, the absence of material giving a reliable rather than hypothesized Soviet perception.³⁴

However, whilst an accurate understanding of the Blockade from a Soviet perspective would be extremely advantageous, the Airlift historian seeks primarily the answer to one question: why was the response to the Airlift so muted. The Russian historian Michail Narinskii in 'The Soviet Union and the Berlin Crisis' accorded the Airlift nine sentences emphasizing the Soviet expectation that the Airlift would fail and neither side wished the Blockade to degenerate into a hot war.³⁵ He concluded that the Soviets failed to appreciate the Western powers' determination to create a West German state and 'the financial-economic and military-technical resources' they were prepared to commit. Again the emphasis is on the Americans with Narinskii writing: 'The successful functioning of the American "air-bridge" resulted in the Soviet Union suffering a political and propaganda defeat'.³⁶ Vladislav Zubok accorded the Blockade four pages from 344 in *A Failed Empire: The Soviet Union in the Cold War from Stalin to Gorbachev* and submitted that 'Unexpectedly, the Soviet blockade of West Berlin became a propaganda fiasco and a strategic failure' because of the mild winter and 'Anglo-American ingenuity in organizing the airlift'.³⁷ Victor Gobarev was a Soviet Army officer and a historian in the Russian Federation Military Institute and yet in spite of this background, in 'Cold War Crises: Soviet Military Plans and Actions during the

³³ First printed 1988 - Tusas, p. xii.

³⁴ V. Vysotsky, 'Soviet view of Berlin Airlift', *Air Power History*, Vol. 36, No. 1, Spring 1989 was extracted from V. Vysotsky, *West Berlin* (Moscow: Progress Publishers, 1974).

³⁵ Michail M. Narinskii, 'The Soviet Union and the Berlin Crisis', in *The Soviet Union and Europe in the Cold War, 1943-53*, ed by Francesca Gori and Silvio Pons (Basingstoke: Palgrave, 1996) pp. 67-74.

³⁶ Narinskii, p. 73.

³⁷ Zubok, pp. 74-77 (quotations at p. 76; the latter was the sole mention of the Airlift).

First Berlin Crisis, 1948-49' he recorded that because not all archives were accessible, he had to derive some of his findings rather than evidence them from specific documents.³⁸ His contention was that Stalin did not wish to unleash a war over Berlin and instead sought to use his military power to blackmail the West.³⁹ Gobarev allocated two pages out of 24 to the Airlift, rather than the Blockade, and concluded that 'The ensuing airlift suited both sides in so far as that measure did not increase the risk of further and perhaps irrational military confrontation'.⁴⁰ Thus these historians argue that the Soviets expected the Airlift to fail and degeneration into a hot war had to be avoided which, as will be seen in Chapters 2 and 5 below, matches with the position of western researchers.

There is also an absence of autobiographies by the senior British Airlift officials (or collections of their private papers⁴¹). The American Commanding General of the Combined Airlift Task Force [CG CALTF], Major General William Tunner's *Over the Hump* covered his whole career as did *Memoirs of an Accidental Airman* by Group Captain Frederick Rainsford.⁴² Although both helped expose air force thinking during the Airlift, it was just one incident in their lives. Rainsford allocated 18 pages to it out of 261 pages and Tunner 74 from 332.⁴³

³⁸ Victor Gobarev, 'Cold War Crises: Soviet Military Plans and Actions during the First Berlin Crisis, 1948-49', paper edited by David M. Glantz, *The Journal of Slavic Military Studies*, Vol. 10, No. 3, September 1997 pp. 1-4.

³⁹ Gobarev, p. 7.

⁴⁰ Gobarev, pp. 19-20, 22 (for quotation).

⁴¹ Liddell Hart Centre for Military Archives, King's College London, *Survey of the Papers of Senior UK Defence Personnel, 1900-1975* revealed no private paper collections for the senior British officers based in Germany during the Airlift. The private papers of Air Mshl Sir Thomas Williams, who died in 1956, held by RAF Museum, are of a social nature.

⁴² F. F. Rainsford, *Memoirs of an Accidental Airman* (London: Harmsworth, 1986). Rainsford was Deputy Director of Air Support and Transport Operations [DDASTO] and focal point in the Air Ministry for the day-to-day Airlift operations by the RAF - "Freddie" Rainsford, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989) pp. 55-59.

⁴³ Tunner's autobiography should be read in conjunction with Hanson's study into his style of leadership - David S. Hanson, 'When You Get a Job to Do, Do It: The Airpower Leadership of Lt Gen William H. Tunner', *Drew Papers* (Air Force Research Institute, Air University Maxwell AFB, 2008). For example p. 62: 'He highlighted the important role his "old reliables" played in the airlift operations he commanded, but limited his praise for them to their ability to follow his instructions. Tunner never recognized another airlift leader within his commands, nor identified anyone capable of taking his place'.

Owing to the lack of autobiographies by senior officials, the papers presented at conferences and symposia by individuals increase in importance. Air Commodore John Merer (Air Officer Commanding Number 46 Group)'s paper to the Royal Aeronautical Society reflected his October 1949 'Report on Operation PLAINFARE by No. 46 Group' contained in the Headquarters British Headquarters British Air Forces of Occupation (Germany) [HQ BAFO]'s 1950 *Report on Operation PLAINFARE*.⁴⁴ Frank Roberts's recollections, expressed during a symposium, of his service as the Private Secretary to Bevin gave a first-hand insight into his minister's meeting with Lieutenant General Albert Wedemeyer; the early unsuccessful negotiations with Stalin, and the importance of the support of the Berliners living in the American, British and French Sectors [western Berliners] to the Airlift succeeding and the Blockade failing.⁴⁵ Amongst the other participants in this 1989 symposium were some who were either organizers of or participants in the Airlift: Kenneth Cross, Rupert Crowdy, John Dowling, Jack Holt, Cecil James, "Freddie" Rainsford, and Brian Stanbridge.⁴⁶

The scholarly coverage of the Airlift - and especially of the British dimension - in the learned journals is meagre. In academic journals, Daniel Harrington's 1984 'The Berlin Blockade Revisited'⁴⁷ is of interest historically because of the publication almost 30 years later of his *Berlin on the Brink* and Emma Peplow's 2010 'The Role of Britain in the Berlin Airlift'⁴⁸ re-evaluated earlier accounts of Anglo-American harmony and British influence in the partnership. However, she covered mainly the early period of the Airlift; drew principally on Foreign Office primary sources, and her paper was not a study of the airborne operations. Articles in journals written by specialists for a particular audience - airpower and logistics in this case and often

⁴⁴ AP3257, Appendix C; J. W. F. Merer, 'The Berlin Air Lift', *Proceedings of Lecture to Royal Aeronautical Society*, 13 April 1950. Also Anon, 'Lessons of "PLAINFARE" A. Cdre Merer's R.Ae.S. Lecture on the Berlin Air Lift', *Flight*, 20 April 1950.

⁴⁵ Frank Roberts, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989).

⁴⁶ HMG, Third Supplement to *The London Gazette No. 42998 of 11th May 1963* (published 21 May 1963) for spelling of Brig (Rtd) Crowdy.

⁴⁷ See footnote 5.

⁴⁸ Emma Peplow, 'The Role of Britain in the Berlin Airlift', *History*, Vol. 95, Issue 318, April 2010, p. 212.

termed professional journals - have also covered the Airlift but they tend to be narrative rather than analytical. Examples for military audiences include several by a one-time Senior Historian at the Ministry of Defence Air Historical Branch, Paul Wood,⁴⁹ and the near-contemporaneous ones in *The Royal Army Service Corps Review*⁵⁰ addressing the significant role that the British Army had in the Airlift's success.

Thus far the discussion has been about the Berlin Airlift as an historic application of airpower in response to a blockade in Germany during the Cold War. In 1934 Major General John Fuller wrote:

Surely one of the strangest things in military history is the almost complete silence upon the problem of supply. Not in ten thousand books written on war is there to be found one on this subject.⁵¹

In the interim since 1934, a relatively small number of works have examined this aspect of warfare, although rarely in any detail. Martin Van Creveld published an influential study in 1977, *Supplying War: Logistics from Wallenstein to Patton*; but this stretched, necessarily thinly, over four centuries, covering a series of campaigns stretching from 1560 to 1945.⁵² Other authors, Thomas Kane and Julian Thompson for example,⁵³ have since addressed the topic, and the wider historical study of logistics is, thus, no longer entirely Fuller's 'cinderella' subject.

⁴⁹ Paul R. Wood: 'The Berlin Airlift', *Air Clues*, Vol. 33, No. 5, May 1979, pp. 170-176 - with extensive photographs; 'Berlin Airlift Reconsidered: Origins and Stages', *Air Clues*, Vol. 41, No. 6, June 1987, pp. 227-230; 'Berlin Airlift Reconsidered: Problems and Success', *Air Clues*, Vol. 41, No. 7, July 1987, pp. 267-270.

⁵⁰ T. H. Downes, 'The Berlin Airlift', *The Royal Army Service Corps Review*, Vol. 1, No. 1, 1948 (Aldershot: The RASC School); K. W. McQueen, 'Use of Tanker Aircraft in Operation "Plainfare"', *The Royal Army Service Corps Review*, Vol. 1, No. 1 1948 (Aldershot: The RASC School). Also relevant, D. J. Sutton, ed.-in-chief, *The Story of the Royal Army Service Corps and Royal Corps of Transport 1945-1982* (London: Leo Cooper 1984).

⁵¹ Cited by MOD, *AP3000 British Air and Space Power Doctrine* <www.raf.mod.uk/rafcms/mediafiles/374E9EFB_1143_EC82_2EC09693E342D3C7.pdf> [accessed 29 June 2013] (Chap. 10 'Sustainability'). Reference was to Fuller's Preface to Colonel G. C. Shaw's, *Supply in Modern War* (London: Faber & Faber, 1934) p. 9.

⁵² Martin Van Creveld, *Supplying War: Logistics from Wallenstein to Patton*, 2nd edn. (New York: Cambridge University Press, 2004.). The postscript to the 2nd edition extended the study until 2003.

⁵³ T. M. Kane, *Military Logistics and Strategic Performance* (London: Cass, 2001); Julian Thompson, *Lifeblood of War: Logistics on Armed Conflict* (London: Brassey's, 1998).

To achieve the Airlift's targets, high aircraft utilization was necessary which demanded it had strong logistical support. The importance of logistics in this maintenance role has been acknowledged by historians such as Daniel Harrington and Roger Miller, albeit again what has been published has not always been in detail and has been orientated towards the significant challenges of supporting 1st ALTF across the Atlantic. However, the Airlift's mission - to sustain over two million people - was a logistical one.⁵⁴ Thus it also forms part of the study of logistics in its own right.

Van Creveld concentrated on land-based, mobile, offensive campaigns where supply to the frontline troops was by surface means with an emphasis on its importance to military success and the trend across the genre is to write about hot wars. The Airlift, on the other hand, involved unarmed transport aircraft flying along designated corridors during the Cold War. As no literature has been published identifying how the application of logistics during the Airlift differed from hot wars up until the end of the Second World War, this is a further objective, albeit a subsidiary one, for the thesis.

Thus the Airlift's historiography, and particularly the British component, is problematic. The positioning of the Airlift in scholarly material within wider contexts such as the Blockade and the Cold War and the emphasis in what has been produced on the larger American participation means that the coverage given to the British involvement is small and content is constrained in both breadth and depth. With a few exceptions, there is an insufficiency of explanatory detail connecting sources and conclusions. Furthermore, it is puzzling that the British part has not been investigated using archival sources to discover if it was actually logistically necessary within the total Anglo-American operation and what other options were potentially available. An empirical study of the British involvement in the Berlin Airlift, one founded on a thorough examination of the archival sources, is thus overdue.

Many archives containing relevant information exist in the United States, Australia,

⁵⁴ AP3257, p. 281; TNA, AIR 25/1266, No. 46 Gp. ORB, Appendices September-October 1948, Appendix 20 to Form 540 dated 15 October 1948, 'Letter Directive for a Combined USAF-RAF Airlift Task Force'.

Britain, Canada, Germany, New Zealand, and South Africa. Overall, their holdings are rich and plentiful, for example, in the [UK] National Archives, Kew there are 600 containers of documents, of varying relevance, and there are 400 in the [US] Air Force Historical Research Agency, Maxwell Air Force Base [AFHRA]. Indeed it may well be that the sheer scale of the archival sources relating to the subject may have deterred historians hitherto.

The documents in AFHRA address Operation VITTLES and then principally the USAF involvement. This collection is extended by sources held in three other US archives: the Naval History and Heritage Command for naval aviation, and the Library of Congress and US National Archives and Records for Department of the Air Force documents. Greater use was made of the National Archives at Kew given that the objectives of the study were primarily into the British involvement, Operation PLAINFARE. Principal sources accessed were in the Air Ministry and RAF series (AIR) and in particular the pertinent papers of the Air Ministry, HQ BAFO and Headquarters Transport Command; the operation record books [ORBs] of the involved RAF organizations, and the several Airlift statistical repositories. The need to hire civilian aircraft and the growing importance of the resultant Civil Lift extended the research into the archives of the Foreign Office especially, but also the Treasury and Ministries of Civil Aviation and Supply. The role of the British in both cargo handling on the ground and maintaining airfield infrastructure added the War Office and Army files to the scope consulted.

Over 2.3 million short tons were delivered to Berlin and in excess of 555,000 American and British sorties were flown.⁵⁵ Although each consignment would have been documented, the individual records no longer exist.⁵⁶ There were 12 airfields and two flying boat bases despatching freight and in Germany alone, 16 organizations were engaged in the Airlift.⁵⁷ Thus at the time there were many sets of statistics. Few survive now and those which do so are usually incomplete. Daily

⁵⁵ AP3257, pp. 519, 529.

⁵⁶ [For RAF] AM, AP3150: *Royal Air Force Manual of Movements*, 1st Ed, 1948, Part No. II, Section No. 2, Chapters Nos. 1-2; TNA, WO 351/59, example RAF F1256A manifest.

⁵⁷ AP3257, p. 67 showed 13 organizations in Germany, excluding HQs BAFO, USAFE and No. 46 Gp., pp. 152, 323-327 listed the airfields, including RAF Buckeburg, and the flying boat bases.

returns were circulated widely and British examples were apt to be stencilled onto poor quality paper which is now extremely fragile. Individual daily returns were amalgamated by higher formations and weekly, fortnightly and monthly totals were also compiled and these tend to be better preserved.⁵⁸

Whilst operation record books of RAF squadrons are normally rich sources of information, because of the pooling arrangements when the individual RAF Transport Command squadrons arrived in Germany those covering the Airlift are generally unproductive. Normal detailed sortie records were seldom recorded and in some cases, the ORBs themselves were not maintained.⁵⁹ The Transport Command aircraft and personnel were based on BAFO stations that were commanded by local officers. The details in many of these station ORBs are sparse with the best giving the total outbound sorties daily and the gross tonnage despatched.⁶⁰ The information recorded in Command and Group ORBs lack detail or hold it intermittently in copies

⁵⁸ Examples of sources for statistics:

Daily: Anon, 'Hogozit Board', *Task Force Times*; TNA: AIR 8/1647 - 1649, Progress Reports; AIR19/621, AM Central Statistics Branch Statistical Information; AIR 20/7282 - 7285, Berlin ALREPS; AIR 55/202 - 203, RASO Lubeck daily SITREPs; AIR 28/1034, RAF Gatow [copies of ALREPS and totals for aircraft and consignment movements]; WO 267/497, RASO Wunstorf daily SITREP.

Daily and weekly: TNA, FO 1032/1411, Airlift 'Plainfare': statistical weekly summary.

Weekly: TNA: AIR 20/7825 - 7826, Berlin Weekly Statistical Summary; FO 943/788, Control Commission for Germany Statistics.

Fortnightly and monthly: BAFO compiled statistics held in TNA: AIR 55/106, AIR 55/107, AIR 55/109 and AIR 55/110.

Monthly: AFHRA, IRISNUMS: 241489 - 241490, Statistical summaries; AP3257, Apps: C, D, and R; HQ USAFE, *Berlin Airlift: A USAFE Summary, 26 June 1948-30 September 1949* (HQ Ramstein AFB: USAFE reproduction Centre, undated, circa 1950) pp. 12-20; Department of the [US] Air Force, Operations Statistics Division, *United States Air Force Statistical Digest Jan 1949 - Jun 1950 Fifth Edition* (Washington DC: US Government, 1951) <www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA551604> [accessed 22 January 2013] (USAF Airlift Data Table 207).

⁵⁹ AP3257, pp. 155, 191; TNA: AIR 20/6891, ACAS(Ops) undated report on visit to BAFO 30 September to 2 October 1948 and Meeting 5 October 1948; AIR 27, Squadron ORBs and Appendices.

⁶⁰ TNA: AIR 28/997, RAF Buckeburg; AIR 28/1002, RAF Celle; AIR 28/1029, RAF Fassberg; AIR 28/1069, RAF Lubeck; AIR 28/1108, RAF Schleswigland; AIR 28/1163, RAF Wunstorf.

filed in the Appendices.⁶¹

Whilst there are a number of contemporary or near-contemporaneous official reports available in archives, a potentially significant one is missing. A Transport Command report was completed after the printing of BAFO's *AP3257 A Report on Operation PLAINFARE* and was sanctioned by the Air Ministry for only 'limited' circulation owing to a lack of newsprint in Great Britain.⁶² No copy of that report was located during the research.⁶³ The Air Ministry stated that the report 'resembles in some aspects that produced by HQ BAFO'.⁶⁴ Given the very substantial post-Airlift reduction in the transport force announced a mere six months after the Airlift ceased and the friction between the Air Ministry, HQ BAFO and Headquarters Transport Command during the Airlift, its disappearance is regrettable.⁶⁵

SCOPE OF THE THESIS

Although contemporaries and subsequent historians have agreed that the Berlin Airlift was a tactical success in the early stages of the Cold War, and that the British participation contributed materially (although how materially has hitherto been a matter of conjecture), there is much about the British involvement in the Airlift that remains uncertain, both as to intentions and outcomes. This thesis seeks to resolve a number of the mysteries surrounding both aspects of the British role.

The first uncertainty concerns the motives for the British participation in the

⁶¹ TNA: ORBs and Appendices: AIR 24/1806 and 1807, BAFO; AIR 24/2046 - 2050, Transport Command; AIR 25/1250 - 1256, Fs540 No. 46 Gp.; AIR 25/1265 - 1278, Appendices No. 46 Gp.

⁶² TNA, AIR 2/10064, Es:14-15 Christie 23 April 1951, Coote 11 April 1951. Transport Command was the RAF's functional command for air transportation. It provided the aircraft, the aircrew and for most of the time, the servicing personnel for the military side of Operation PLAINFARE. See Chap. 5 below.

⁶³ Peter Elliott, Head of Archives, email 170905 April 2013 and MOD D/AHB(RAF)/8/17/1 dated 29 April 2013 confirmed that the Department of Research & Information Services [DoRIS] at the RAF Museum and AHB were unaware of the location of a copy.

⁶⁴ TNA, AIR 2/10064, E.14, Christie 23 April 1951.

⁶⁵ Hansard, 'Mr A. Henderson's [Secretary of State for Air] Statement' (and questions arising), HC Deb 21 March 1950 Vol. 472 cc.1765-1822; HMG, 'Statement on Defence 1950', Command 7895, (London: HMSO, March 1950). Arthur Henderson used the term 'elimination' of Transport Command in correspondence to Bevin on 27 October 1949 - TNA, AIR 19/766. See also Chaps. 5 and 6 below.

campaign in the first place. In opting to support the creation of an airbridge between western Germany and blockaded Berlin, were Britain's politicians acting upon a lingering (and arguably misplaced) perception that their country was still a Great Power or at least needed to behave as though it were, for reasons of maintaining national prestige. After all, Britain was one of the victors of the Second World War; still had a large empire, and was a permanent member of the United Nations' Security Council. Furthermore, with Germany and Japan defeated, and France recovering from its occupation, Britain was without competition as the third world power, after the US and the Soviet Union.⁶⁶ To many, it was a matter of national self-esteem that it should take a prominent role in the maintenance of a free western Berlin, connected to and supplied by the West.⁶⁷

But if there were political reasons for Britain's involvement, as viewed from Whitehall, was British airborne participation in some demonstrable sense indispensable logistically to the operation's success? To answer this question the relative size of the British contribution to the Airlift, as compared with that of the USA, has to be established. This involves identifying the targets set; the numerical strength, size and capacity of the various types of American and British aircraft involved, and the number of sorties each actually flew. In turn, this helps to resolve the related question: if British aircraft were needed logistically, could the US have replaced them with their own? The latter consideration inevitably requires examination of the US forces available at the time and the options available to US commanders engaged in planning the Airlift. Could the Americans, for instance, as an alternative to deploying more aircraft, have replaced the British by re-locating all of 1st ALTF to the British Zone which was closer to Berlin? Moreover, thorough assessment of the British and American contributions to the Airlift serves to identify

⁶⁶ Bullock, Chaps. 1, 3; Hennessy, *Never Again*, pp. 87, 90-93, 150, 230, 236; Kenneth O. Morgan, *Britain Since 1945: The People's Peace*, 3rd edn. (Oxford: Oxford University Press, 2001) pp. 42-43, 52-53; TNA, FO 800/467, Private papers of Mr Ernest Bevin: Germany: 1948-1951.

⁶⁷ This enquiry into the role of Britain in the Berlin Airlift is a logistics study of the airbridge. It does not investigate further whether there may have existed other reasons for employing British aircraft, for example a desire to show her major creditor, the USA, and the Western world's major power that Britain was a sure and steadfast ally. Deploying aircraft would have been a highly visible way of doing this although as Chapters 5 and 6 show it also revealed how great the disparity in capability was between her and the USA.

factors in addition to aircraft size and numbers that may have accounted for performance differences between the two nations, for example the traffic control policies - and the priorities inherent within them - imposed centrally by CALTF; the number of aircrews available; the reliability of each type of aircraft; the maintenance policies adopted by each force?

In summary, then, four linked questions arise which can be expressed succinctly as: were British aircraft needed logistically; could the Americans have replaced the British by either deploying more resources or by locating all of 1st ALTF to the Northern Zone, and fourth, did factors in addition to aircraft size and numbers account for performance differences between the Americans and the British? None of these questions has been investigated fully until now even though they address the contemporaneous issues discussed in the next paragraphs.

The size and usefulness of the British involvement in the Airlift was debated at the time. There were recurrent fears, on the British side, that the increasing scale of American resources could eventually render British involvement sidelined, if not wholly redundant. In November 1948, in the course of correspondence between General Sir Brian Robertson - the British Military Governor Germany - and the Foreign Office's German Section, it was recognized that increases in American capacity might result in British airborne involvement being limited to specialist tasks, such as the provision of bulk liquid fuel tankers by civilian contractors - the 'Wet Lift'.⁶⁸ Indeed, British military planners remained acutely sensitive to the implications for national and RAF prestige that flowed from the size and perceived utility of the British role, relative to that of the Americans. In January 1949 the Air Staff at HQ BAFO concluded that: 'It is understood that the Americans have plans for increasing numbers and size of aircraft. There may come a time when we will become an embarrassment rather than an asset'. The inefficiency 'of our own modest effort' was tendered in explanation; the small RAF Douglas Dakota - numerically the largest asset in the British air fleet - was specifically singled out, and no date was

⁶⁸ TNA, AIR 2/10063, Es:151-152 Frankfurt 920 Basic 6 November 1948, Es:158-159 FO (German Section) 3212 Basic 3 November 1948. For the term 'Wet Lift', see AP3257, p. 66.

speculated for when this might occur.⁶⁹

From an American perspective, in September 1948 Major General William Tunner (CG CALTF) - writing to the Commanding General United States Air Forces in Europe [CG USAFE] - argued that a force of 400 C-54 aircraft would limit British involvement to 'ground support'⁷⁰ and although his subsequent claim that 'we can keep pouring it in for 20 years if we have to'⁷¹ may have been over stating the case, it remains true that by 1946 over 1,100 Douglas Skymaster aircraft had been delivered to the United States Army Air Forces.⁷² At the time of the Airlift, the Douglas Skymaster was the American military's principal heavy haulier⁷³ and 225 had been deployed to 1st ALTF by January 1949 - each with a capacity approaching ten short tons.⁷⁴

Whether British fears that their contribution was embarrassingly meagre or American boasts as to their self-sufficiency were justified will be considered in Chapters 5 and 6 below. Certainly, there were precedents for Western allies dropping out of the campaign. In September 1948 the Americans had taken over French airborne participation, albeit that was far smaller than the British effort.⁷⁵ Moreover, as William Tunner observed in the previous paragraph, it was the airborne contribution not the effective support by organizations such as the British Army Air Transport

⁶⁹ TNA, AIR 55/218, Es:89-190 Air Staff 13 January 1949 'Some implications on the British side of the two year plan'; the quotations are at E.189. See Chaps 5 and 6 below for discussion about the continued use of the Dakota by the RAF when the USAF had withdrawn the type from the Airlift in September 1948 and the British Civil Lift had followed suit in November 1948 - *AP3257*, pp. 224, 243, 284.

⁷⁰ AFHRA, IRISNUM 1038197, 'History of the Airlift Task Force (Prov.): September 1948', Tunner 28 September 1948.

⁷¹ USAF, 'Lieutenant General William H. Tunner', *Biographies* <www.af.mil/information/bios/bio.asp?bioID=743> [accessed 16 December 2012].

⁷² 1,163 recorded in HQ, Army Air Forces, Statistical Control Division, Office Of Air Comptroller, *Army Air Forces Statistical Digest 1946 First Annual Number* (Washington DC: US Government, 1947) <www.afhso.af.mil/shared/media/document/AFD-110401-019.pdf> [accessed variously 2011] (pp. 95-96, 101).

⁷³ Department of the Air Force, Operations Statistics Division, *United States Air Force Statistical Digest Jan 1949 - Jun 1950 Fifth Edition*, p. 171.

⁷⁴ *Berlin Airlift: A USAFE Summary*, p. 11 and Chaps 5 and 6 below.

⁷⁵ Huschke, pp. 145-146; Roger G. Miller, 'French eagles, too', *Air Power History*, Vol. 45, No. 3, Fall 1998; Miller, *To Save a City*, (Texas A&M) pp. 74-75.

Organization on the ground that was at risk.

Chapter 6 also considers another scenario that could have led to British aircraft becoming unnecessary, the redistribution of 1st ALTF. In December 1948, for example, Lieutenant General John Cannon (Commanding General USAFE) and Air Marshal Thomas Williams (Air Officer Commanding-in-Chief BAFO) recognized that relocating aircraft from the Southern Zone to the Northern one should increase significantly the tonnage hauled.⁷⁶ In his autobiography, William Tunner put the increase at 50%.⁷⁷ Major General Edwin Herbert (General Officer Commanding British Troops Berlin) communicating with the British Military Governor⁷⁸ and Air Commodore Reginald Waite (Head of Air Section, Combined Services Division of the Control Commission) with the Senior Air Staff Officer at HQ BAFO⁷⁹ also appreciated that there were advantages to be gained in tonnage hauled from such a relocation. The Chief Research Officer at BAFO (and Science 2 at the Air Ministry), Dr. Arthur Charlesby, went further in a report that was critical of British performance. He suggested relocating the whole of the American task force to the North and if necessary concurrently transferring the British aircraft to airfields in the Southern Zone whilst airfield capacity in the Northern Zone was expanded.⁸⁰

The question about differences in performance investigates a statement by Dudley Barker in 1949 that the Americans had carried the major part of the tonnage because they had more and larger aircraft.⁸¹ Peter Hennessy wrote that 'Britain, [Maynard] Keynes knew, was to all intents and purposes, a bankrupt';⁸² Emma Peplow wrote that the British had to struggle to 'find the resources to contribute to the airlift' owing to its financial difficulties and 'the RAF simply did not have the resources to fulfil

⁷⁶ TNA: AIR 2/10063, Es:45-52 'An Appreciation on Operations "Vittles" and "Plainfare"[:] The Air Aspect' Cannon/Williams 22 December 1948.

⁷⁷ Tunner, *Hump*, p. 170.

⁷⁸ TNA, AIR 20/7804, E.39, 2 September 1948.

⁷⁹ Liddell Hart Centre for Military Archives, King's College London, Waite RNW/DO 31 August 1948 to SASO BAFO. Also Waite RNW/DO 31 August 1948 to Maj Gen Hall, CMGUS.

⁸⁰ TNA, AIR 55/98, Es:38-46 Report 143 15 October 1948.

⁸¹ Barker, p. 6.

⁸² Hennessy, *Never Again*, p. 95.

Britain's share of the operation'.⁸³ Resources rather than aircraft suggests there may have been causes beyond Barker's numbers and sizes which is a position also supported by Seb Cox, Head of the Ministry of Defence [MOD]'s Air Historical Branch, in an *Royal Air Force Air Power Review* article.⁸⁴ Furthermore, it accords with *AP3257 A Report on Operation PLAINFARE* describing the marked difference in aircraft utilization between the USAF and the RAF.⁸⁵

Moreover, these research questions and their answers exist in a wider context: that of their recent precedents. Those precedents existed both as material experiences from which detailed technical lessons could be learned and as impressions in the minds of the various participants in the Berlin Airlift. The thesis, therefore, investigates the American World War II airbridge from India to China (the 'Hump') in which General Tunner had been a vital figure; the Anglo-American airbridge during the 'Siege of Imphal' and the air supply thereafter throughout the subsequent 1944/1945 advance to Rangoon, and for a Soviet perspective, which may help in deducing aspects of Soviet behaviour, the 1941/1944 air and ground sustainment of Leningrad; the 1942/1943 German airbridge at Stalingrad, and the advance by the Sixth Guards Tank Army to Port Arthur in August 1945.

METHODOLOGY AND STRUCTURE OF THESIS

This is a thesis about air logistics as a sub-set of military history - and specifically the use of airpower, and particularly British airpower, to sustain a civilian population of over two million -⁸⁶ which, as has been established above, is poorly served by existing historiography. Examination of the four questions requires a combination of the skills of the historian (in the precise archival recovery of policy and practice), with the those of the logistician, able to bring the insights into the practice of supply to the understanding of the conundrums facing those who sought to prevent the Soviet strangulation of western Berlin in 1948/1949. A combination of methodologies - from both disciplines - has been used to construct a hybrid one that

⁸³ Peplow, 'The Role of Britain in the Berlin Airlift', p. 212.

⁸⁴ Cox, p. 28.

⁸⁵ *AP3257*, p. 24.

⁸⁶ Described as the 'first humanitarian airlift of the Cold War, and the largest in history' by Haulman in *Wings of Hope*, p. 3.

has been employed to analyse the rich archives of primary data. It is an approach to the subject matter of the Berlin Airlift that is unique.

The thesis is composed of seven chapters including this introduction. Chapter 2, covers context. It describes the path that led to the instigation of the Blockade; the factors which allowed the Soviets to do so, and why the Americans, British and French were permitted to fly over the Soviet Zone. It gives a western Berliner perspective to the early years of the occupation and so serves to explain their stance during the Blockade. Being scene-setters, these parts of the chapter do not analyse events and decisions nor do they consider what the alternative courses might have been. The final part to Chapter 2 identifies Britain's financial position post-war - for example her large international debt; the priorities of her Government - such as post-war recovery; her population's needs and expectations - a health service and adequate housing, and the cost to Britain of the Berlin Airlift. This part of the chapter establishes the financial impact of the Airlift on the Nation. It shows that the expenditure was relatively small with much of it being due to the chartering of civilian aircraft because the much-reduced post-war RAF was unable to deliver the tonnage that the Government aspired to.

The American historian Frank Heck⁸⁷ wrote that the Hump was a proving ground that 'made it possible to conceive the Berlin airlift of 1948-49 and to operate it successfully'.⁸⁸ His editors reinforced the operational aspect stating: 'in terms of the development of air-transport concepts and techniques the airlift to China was of first importance'.⁸⁹ Chapter 3 reveals what these precedents were. It explores the Anglo-American airbridge during the 'Siege of Imphal' and subsequent air supply in the advance to Rangoon to establish whether similar statements could have been made about the British experience. The chapter also explains why the German airbridge at Stalingrad failed. The findings in Chapter 3 are useful in helping to judge the responses

⁸⁷ Working for the American Office of Air Force History.

⁸⁸ Frank H. Heck, 'Chap. 5 Airline to China', in *The Army Air Forces in World War II, Volume VII: Services Around the World: I. Air Transport*, ed. by Wesley Frank Craven and James Lea Cate (Chicago: University of Chicago Press, 1958) p. 151.

⁸⁹ Wesley Frank Craven, and James Lea Cate, 'Forward', *Army Air Forces in World War II, Volume VII: Services round the World*, (Chicago: University of Chicago Press, 1958,) p. xii.

of the parties in the analysis of the Airlift in Chapters 5 and 6. The final area of precedent is the Soviet dimension and how their wartime experiences - and specifically the siege of Leningrad; the German airbridge at Stalingrad, and the advance by the Sixth Guards Tank Army to Port Arthur in August 1945 - may have influenced their response to the Airlift.⁹⁰

Chapter 4 is the first of three covering the Blockade and the Airlift. It explains why the Airlift continued for 15 months and evolved from the short-term augmentation of stockpiles originally intended to a potentially permanent commitment. It shows how the Blockade was lifted after 11 months through diplomacy, not by a military victory.⁹¹ The western Berliners were not passive observers whose loyalty had to be retained and their morale maintained; many were active participants.⁹² Tegel airfield was built using 17,000 labourers, over half of whom were women, and the 'stevedores' off-loading the aircraft were western Berliners.⁹³ On the other hand, the strike by western sectors railway workers after the lifting of the Blockade delayed the end of the Airlift.⁹⁴ The retention of western Berliner support is a factor that has to be considered when exploring whether the Americans could have replaced the British in Chapter 6. The cost for this is shown in Chapter 4, for example the Airlift forecast for May 1949 allocated nearly 90% of the tonnage to be flown into the City to the indigenous population and who, in spite of this, were living under austere conditions.⁹⁵

Chapter 5 reveals how the precedents for success - identified at Chapter 3 - were applied during the Airlift to understand how it operated as a necessary pre-cursor to

⁹⁰ Tunner, *Hump*, p. 184.

⁹¹ Tusas, Chap. 13.

⁹² Frank Roberts, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989) p. 74:

However good an airlift we had, however magnificently we'd organised it, if we hadn't had the West Berlin population with us, it couldn't have worked.

⁹³ Elizabeth S. Lay, Historical Division, Headquarters European Command, 'The Berlin Airlift: Part 1: 21 June-31 December 1948' *Occupation Forces in Europe Series 1948-1949*, (Karlsruhe: 1952) p. 24; Tunner, *Hump*, pp. 211-212.

⁹⁴ AP3257, p. 145; Tusas, pp. 361-5.

⁹⁵ AP3257, p. 65.

Chapter 6. Further, this groundwork identifies differences between the Americans and the British in the implementation of these success factors from the earlier operations and thereby starts to expose why the performances achieved by the two nations were dissimilar and to reveal causes for this beyond those of aircraft sizes and numbers. The comparison of fundamental differences in the application of logistics between the Airlift and hot wars up until the end of the Second World War also draws on material in Chapters 5 and 6. However, as this is a subsidiary consideration for the thesis and to avoid disrupting the main flow of the discussion in the thesis, it is addressed in a separate appendix, Appendix 7.

Chapter 6 records the results of the air logistics statistical analysis of hitherto unexploited Airlift primary data.⁹⁶ It shows that British aircraft were logistically necessary to the Airlift. It reveals the capability of the Americans to replace them by deploying more aircraft; the implications on the USA of so doing, and the limitations on the Airlift, especially in the long-term, had this been necessary. The implications of specialist tasks, such as the Wet Lift, are examined. Chapter 6 acknowledges that locating all of 1st ALTF on airfields in the Northern Zone of Germany would have increased the tonnage hauled but for reasons it explains, this would not have been by the amount expected contemporaneously. By combining the understanding of how the Airlift operated - acquired in Chapter 5 - with statistical analyses, Chapter 6 shows how replacing the British could have altered Airlift procedures, and would have required infrastructure development in the Northern Zone and enhancement to the American maintenance pipeline that stretched back across the Atlantic. In addition, and as an outcome of the statistical study and evaluation of the other options, Chapter 6 continues to identify that the British performance arose for reasons in addition to Dudley Barker's explanation about having fewer, smaller aircraft.

Chapter 7 is the concluding chapter summarizing the findings from the preceding chapters to answer the research questions about British performance, the logistical need for her aircraft, and the ability of American aircraft alone to have sustained

⁹⁶ The thesis employs information that was calculated from primary source data. A separate addendum is used to cover complex calculations thereby explaining how the answers were achieved.

western Berlin both during the actual 1948-49 Blockade and for the airbridge's continuation into 1951 that was being planned. The comparison between the application of logistics in the Airlift and in hot wars is also addressed to reveal that dissimilar circumstances allowed for different approaches. Chapter 7 ends by identifying how the current Airlift historiography has been expanded by this research whilst considering areas that would benefit from future research.

CHAPTER 2:

PRELUDE TO THE BERLIN BLOCKADE

Chapter 2 provides context for the Blockade and its countermeasure the Airlift. It is divided into three sections. The first one outlines events leading to the Airlift and of especial relevance for this study, how the Soviets were able to mount the Blockade and the Western Powers to counter it with transport aircraft flying along designated air corridors. The second section addresses the western Berliner perspective between the end of the war and June 1948. Not only was their willingness to tolerate the conditions of the Blockade - such as lack of heating, monotonous rations and unemployment - essential but they were an intrinsic part of the Airlift and its success providing the additional, typically unskilled, workforce needed at the airfields to handle freight and to construct facilities. The third section identifies Britain's post-war financial position to help understand the Airlift performance deficiencies revealed in Chapters 5 and 6.

EVENTS LEADING TO THE BERLIN AIRLIFT

During the war the Americans, British and Soviets agreed in broad terms how occupied Germany would be administered. The detail, however, was not ratified. The path from the wartime agreements to the June 1948 Blockade threaded through the development of the occupation structures; the access rights to the Berlin enclave in the Soviet Zone; communist expansion in Europe; the unilateral revision of the Polish borders; the refugees from eastern Europe; reparations and Germany's inability to feed itself or to pay for food imports forcing the Americans and the British to support their zones of occupation; the gradual recognition by the Americans that the Soviets had to be confronted not appeased; currency reform, and the emerging plans for western Germany.¹

The Chapter is contextual. It is not intended to cover every issue that may have led to the eventual Blockade nor is it an analysis of why events occurred or what led

¹ Harry S Truman Library and Museum, Theodore A. Wilson, transcript of 'Oral History Interview with General Lord Robertson of Oakridge', Gloucestershire 1970; V. Vysotsky, 'Soviet view of Berlin Airlift', *Air Power History* (Lexington VA: Air Force Historical Foundation) Vol. 36, No. 1, Spring 1989, pp. 24-25.

participants to make particular decisions. It is not a criticism for example of Franklin Roosevelt's claim that he could 'handle' Joseph Stalin² or Winston Churchill's pressurising of Stalin and Roosevelt to include France as an occupation power³. The section does not consider what might have happened from alternative courses of action; for example if General of the Army Dwight D. Eisenhower had not stopped the 9th [US] Army's advance on Berlin⁴ or General Lucius Clay - American Military Governor Germany - had been allowed to deploy armed convoys across the (Soviet) Eastern Zone⁵.

AP 3257 recorded that 'the blockade of Berlin was the result of a situation which developed mainly as a consequence of decisions made during the war'.⁶ The American, British and Soviet leaders had met at Teheran in 1943; Yalta in February 1945, and Potsdam between 17 July and 2 August 1945.⁷ From 13 December 1943 they were supported by the European Advisory Commission (which France was invited to join on 24 October 1944)⁸ and at Potsdam a permanent Council of Foreign Ministers [CFM] was created⁹. The Allied Control Council of Germany [ACC] consisting of the four military governors was tasked to govern occupied Germany. It

² Yergin, *Shattered Peace: the origins of the cold war and the national security state* (London: Deutsch, 1978) pp. 56-58.

³ Giles MacDonogh, *After the Reich: from the liberation of Vienna to the Berlin airlift* (London: John Murray, 2007) p. 124; Ann and John Tusa, *The Berlin Airlift* (Staplehurst: Spellmount, 1998) pp. 6, 17-18.

⁴ Stephen E. Ambrose, *Eisenhower and Berlin, 1945: The Decision to Halt at the Elbe* (New York: Norton & Co., 2000); Dwight D. Eisenhower Memorial Commission <www.eisenhowermemorial.org/stories/Berlin.htm> [accessed 21 May 2011]; Cornelius Ryan, *The Last Battle* (New York: Touchstone, 1995); John Toland, *The Last 100 Days: The Tumultuous and Controversial Story of the Final Days of World War II in Europe* (London: Mayflower, 1968).

⁵ Tusas, p. 111; Yergin, pp. 379-380.

⁶ HQ BAFO, *AP3257 A Report on Operation PLAINFARE (The Berlin Airlift) 25th June 1948 - 6th October 1949* (Bielefeld: Control Commission, 1950) p. 3.

⁷ Walter Phillips Davison, *The Berlin Blockade: A Study in Cold War Politics* (New York: Arno Press, 1980) pp. 4-6; John Erickson, *The Road to Berlin* (London: Cassell Military Paperbacks, 2003) pp. 155-162, 476-507; Tusas, pp. 5, 14, 35.

⁸ Tusas, p. 6.

⁹ Davison, p. 5; Tusas, pp. 62, 69, 78, 87, 354, and 371; Yergin, pp. 258-260.

was based in the American Sector of Berlin and first met in July 1945.¹⁰ A subordinate body specifically for Berlin, the Kommandatura, met formally for the first time on 11 July 1945.¹¹ The ACC ceased to function on 20 March 1948 and on 1 July 1948 the Soviets withdrew from the Kommandatura.¹²

It was agreed that the decisions of the ACC and the Kommandatura had to be unanimous which with the regularly uncooperative membership of the French and the Soviets meant these bodies were doomed from the outset.¹³ Berlin was to be governed as a single unit and the western members unthinkingly signed a decree drafted by the Soviets: 'Until specific notice all existing regulations and ordinances issued by the Commander of the Soviet Army garrison and Military Commandant of the city of Berlin and by the German administration under Allied control regulating the order and conduct of the population of Berlin shall remain in force'.¹⁴ This lack of caution by the western members allowed the Soviet installed structures and nominees to remain in place until the final East-West split of Berlin's administration during 1948. It also prevented Ernst Reuter assuming his elected post as Oberbürgermeister of Berlin until December 1948 and then only with a writ that applied in the western sectors.¹⁵

At Teheran it was agreed in a general way to move the Soviet and Polish frontiers westwards.¹⁶ At Yalta, detailed discussions about the fundamental issues of post-war Germany were skirted around to avoid damaging the alliance. Whilst the occupation zones, the ACC, and the sectors for Berlin were ratified, access to Berlin from the

¹⁰ D. M. Giangreco and Robert E. Griffin, *Airbridge to Berlin: the Berlin Crisis of 1948, its origin and aftermath* (Novato, CA: Presidio, 1988) pp. 25, 41-42; Roger G. Miller, *To Save a City: The Berlin Airlift, 1948-1949* (College Station, TX: Texas A&M University Press, 2000) p. 5; Tusas, p. 49.

¹¹ Tusas, pp. 12, 34.

¹² Davison, p. 19; Tusas, pp. 102-103, 136-137, 162.

¹³ Alan Bullock, *Ernest Bevin - Foreign Secretary 1945-1951* (Oxford: Oxford University Press, 1985) p. 149; Davison, pp. 6-7; Avi Shlaim, *The United States and the Berlin Blockade, 1948-1949 a Study in Crisis Decision-making* (Berkeley CA: University of California Press, 1983) p. 19; Tusas, pp. 2, 18, 50-51, 61, 63, 86-87, 121-2, 129, 130, 133.

¹⁴ Davison, p. 30; Tusas, pp. 33-35 (p. 34 for quotation).

¹⁵ Davison, pp. 48-53, 171-174; Emmet Hughes, 'Berlin Under Siege', *Life Magazine*, 19 July 1948; Tusas, pp. 26, 294-295.

¹⁶ Yergin, p. 54.

western zones was not discussed. Roosevelt, it is claimed unguardedly, accepted Stalin's reparation demand of US\$10 billion as a 'basis of discussion'.¹⁷ Stalin, however, took the figure as a commitment.¹⁸ Yergin argued plausibly that the President knowingly backed the Soviet programme as relatively moderate and quoting Edward Stettinius, 'one that would not create economic disruption in Europe'.¹⁹ Whether Roosevelt fully understood its significance is uncertain but his announcement that US troops would remain in Europe for no more than two years after victory, with its implication of American return to isolationism and long-term disinterest, was undoubtedly one of the most dangerous statements made at Yalta.²⁰

Whilst not reaching Berlin, the British and especially the Americans had advanced beyond the agreed western boundaries of the Soviet zone of occupation at the war's end. Ten weeks were to elapse before the Soviets advanced to their zonal boundaries in Germany and the British and U.S. forces were allowed to enter Berlin.²¹ In the summer of 1945 British and American ground and air power in Europe was at its peak; strategically they were well placed, and on 16 July 1945 the USA exploded the first atomic bomb. Nevertheless, the US and Britain failed to use these advantages at the Potsdam conference to challenge the positions adopted by the Soviets in Eastern Europe and Berlin. In part this may have been due to the Americans not wishing to jeopardize Soviet participation in defeating Japan.²²

The Soviets had clear aims and post-war they deployed diplomacy, mob violence, massive propaganda campaigns, and the actions of communists in representative and administrative bodies to achieve them. They used international negotiations to cause delays, to conduct propaganda and to state demands and gain concessions. Although the Soviets used propaganda to generate a fear of war, they appeared to set well-defined limits to the risks they were prepared to take and seemed unwilling to go to

¹⁷ Yergin, p. 65.

¹⁸ Tusas, pp. 14-18.

¹⁹ Yergin, pp. 64-66.

²⁰ Tusas, p. 15.

²¹ AP3257, p. 3; Mark Arnold-Forster, *The Siege of Berlin* (London: Collins, 1979) p. 21.

²² Tusas, pp. 35, 38-39.

war over Berlin.²³ The Blockade was implemented in stages allowing them to assess reactions, especially those of the Americans, and to ease back if the risks to themselves became too great.²⁴ Sheila Kern argued that the traitor Donald Maclean's input made this a no risk strategy. However, this assumed that his information was passed and acted on in real-time. It also ignored the political rather than military ramifications of failure.²⁵

The Anglo-Americans, on the other hand, were too vague, indecisive, lacked planning, and failed to appreciate the threat posed by the USSR. They were repeatedly outmanoeuvred by the Soviets.²⁶ With the experience gained over time, the American view of the Soviets changed from that inherited from the Roosevelt administration. President Harry S. Truman's Doctrine for example, which was revealed to Congress on 12 March 1947, stated: 'it must be the policy of the United States to support free peoples who are resisting attempted subjugation by armed minorities or outside pressures'.²⁷ George C. Marshall (US Secretary of State 21 January 1947 to 20 January 1949) shared Truman's hard-line stance refusing at the 1947 Moscow CFM to agree to Molotov's demand for the renewal of 'current production' reparations unless the Soviets agreed to an economically self-sufficient Germany and an account of everything removed so far.²⁸ Eventually, when forced, the Anglo-American leaders were able to make rapid and firm decisions.²⁹

The diplomat John F. Dulles commented on his return from the CFM that: '[Soviet foreign policy] depends little on getting results by diplomatic negotiation. It depends much on getting results by penetrating into the political parties and organizations of

²³ Bullock, pp. 11-12; Davison, pp. xi-xii, 32-33, 205-206, 209-219.

²⁴ Bullock, pp. 547-548, 571-573.

²⁵ Sheila Kerr, 'The Secret Hot Line to Moscow: Donald Maclean and the Berlin Crisis of 1948', in *Britain and the First Cold War*, ed. by Anne Deighton (Basingstoke: Macmillan, 1990) p. 83.

²⁶ Davison, pp. xii-xiii.

²⁷ Giangreco and Griffin, p. 65; Peter Hennessy, *Never Again: Britain 1945-1951* (London: Penguin, 2006) pp. 285-286 (includes quotation), 504 footnote 55.

²⁸ Yergin, p. 298; Miller, *To Save a City* (Texas A&M) pp. 15-16.

²⁹ Davison, p. xiii.

other countries'.³⁰ His quotation was remarkably similar to that cited by Hennessey which was made three years earlier by Christopher Warner³¹: 'she would be constantly manoeuvring to increase the strength of her own position in Europe by establishing her influence in European countries through Left-Wing Governments and by interfering in their internal affairs both through intrigue and through power politics.' Hennessey considered that Warner represented the 'official mind' but Britain was no longer the major Western power and Roosevelt's assessment held sway.³²

Further examples of the change in the American Administration's attitude were Diplomat George F. Kennan's 'Long Telegram' with its analysis of the 'Soviet outlook' in February 1946³³; the Clark Clifford/George Elsey (White House staff) Memorandum, presented in September 1946, advocating that all US international relations had to be evaluated against the overriding Soviet threat³⁴, and the July 1947 'Mr. X' article 'The Sources of Soviet Conduct' by Kennan in *Foreign Affairs*³⁵. America was shifting to 'containment' of the Soviets and as Kennan is quoted as writing 'the Soviet Union is highly sensitive to the logic of force'.³⁶

Clement Attlee and Ernest Bevin had a realistic appraisal of Stalin and the communists when the Labour Government came into office during the Potsdam meeting. Attlee observed trenchantly that: 'yes or no, though you could only count on him if it was no'.³⁷ Attlee granted Bevin his head as Foreign Secretary (Michael

³⁰ Yergin, p. 301.

³¹ Sir Christopher Warner, Undersecretary of the Northern Department of the Foreign Office - Peter Neville, *Historical Dictionary of British Foreign Policy*, (Lanham MD: Scarecrow Press, 2013) p. 315.

³² Hennessey, *Never Again*, pp. 253-255.

³³ George Kennan, 'The Sources of Soviet Conduct' <www.historyguide.org/europe/kennan.html> [accessed 10 April 2013]; Harry S. Truman Library and Museum, Independence MO, Photocopy of George Kennan to James Byrnes Telegram ['Long Telegram'] 22 February 1946, Harry S. Truman Administration File, Elsey Papers <www.trumanlibrary.org/whistlestop/study_collections/coldwar/documents/index.php> [accessed 6 July 2011]; Yergin, pp. 168-171.

³⁴ Yergin, pp. 241-245.

³⁵ Yergin, pp. 322-323.

³⁶ Tutas, p. 69.

³⁷ Bullock, pp. 5-6, 25 (for quotation).

Foot is quoted as saying: 'often enough Bevin was Attlee'³⁸) and Bevin had 'an even deeper one [mistrust] of the Soviet Union'³⁹, through his British Labour Party and trades union experiences⁴⁰. By then Britain was no longer one of the Super-powers and had always to cooperate with one of or both the USSR and USA to gain her objectives.⁴¹

Germany was to be divided into three military occupation zones. The eastern zone, containing Berlin and much of the farm land, was allocated to the Soviets whilst the southern zone, which had the more sophisticated industries, and the northern zone, which had much of the coal and the associated traditional heavy industries, was destined for the Americans and the British.⁴² The USA would have preferred the northern zone and unlike Britain she had the capital, management skills and technical expertise to achieve a quick German recovery which would have been beneficial to all. However, the British wanted it too. They hoped that its resources would help regenerate their own industries. Actually, the two zones were complementary and no matter how the allocation went, separation would adversely affect their recovery.⁴³ At the 1944 Quebec Conference Britain's preference was met subject to the Americans gaining Bremen and Bremerhaven as supply ports.⁴⁴ (France was subsequently given a zone cut out of the Anglo-American allocation).

Stalin's unilateral repositioning of the western frontiers of the Soviet Union and Poland reduced '1937 Germany' by a quarter with the loss of much of the best agricultural land. As pre-war Germany had needed to import 30% of its food this was serious enough but it also reduced the area from which raw materials and

³⁸ Bullock, p. 56.

³⁹ Tusas, p. 53 - citing Dean Acheson.

⁴⁰ Bullock, pp. 5-6, 56-59, 105-107; J. Harold Wilson, *Memoirs: the making of a Prime Minister 1916-1964* (London: Weidenfeld and Nicolson and Michael Joseph, 1986) pp. 124-126.

⁴¹ John Baylis, *Ambiguity and Deterrence: British Nuclear Strategy 1945-1964* (Oxford: Clarendon, 1995) p. 75; Bullock, pp. 5-6; Lawrence Freedman, *Britain and Nuclear Weapons* (London: Macmillan, 1980) pp. 5, 7, 140.

⁴² Arnold-Forster, pp. 24-25; Tusas, pp. 9-10.

⁴³ Arnold-Forster, p. 25; Bullock, p. 22; Tusas, pp. 9-10; Yergin, pp. 65-66.

⁴⁴ Tusas, pp. 9-10.

reparations could come.⁴⁵ Consequently, there was less German money to buy food from abroad. Miller recorded that at Potsdam Churchill had argued 'that Poland and Russia were getting the food and fuel in the form of Silesian coal from a prostrate Germany, while the British and Americans were getting the mouths that had to be fed'. He was further quoted by Miller as saying that: 'the Russians, pushing the Poles in front of them, wended on, driving the Germans before them and depopulating large areas of Germany, whose food supplies they seized, while chasing a multitude of mouths into the overcrowded British and American Zones.'⁴⁶ Giangreco and Griffin cited Truman as saying that the USA 'could not agree to reparations if parts of Germany were given away'.⁴⁷ Nevertheless, it was agreed at Potsdam that each country's reparations would come from that nation's zone of occupation with the American and British zones of occupation providing additional industrial equipment to the USSR.⁴⁸

The Potsdam communiqué explicitly stated that the occupying powers were to treat Germany as a single administrative and economic unit.⁴⁹ However, the revision of the eastern frontiers provided the Soviets with a justification for its July 1945 statements that its (now revised) zone was unable to supply food and hard coal to the western Berlin sectors as had traditionally occurred.⁵⁰ Moreover, by the end of 1945, Britain and the USA had provided large quantities of food to their famished zones whilst the Soviets had taken tons from theirs. By 1947 there were 34,000,000 inhabitants and 7,000,000 refugees (Ann and John Tusa [Tusas] cited 12,000,000⁵¹) in the western zones needing to be fed. Food had to be imported mainly from North

⁴⁵ Davison, pp. 4-5; Mary Fulbrook, *A Concise History of Germany*, 2nd edn. (Cambridge: Cambridge University Press, 2004) Map 13; Tusas, pp. 35, 44.

⁴⁶ Miller, *To Save a City* (Texas A&M) p. 5. See also Mary Fulbrook, *History of Germany 1918-2000: the Divided Nation* (Oxford: Blackwell Publishing, 2002) pp. 124-125 about refugees and conditions in western Germany.

⁴⁷ Giangreco and Griffin, p. 51.

⁴⁸ Giangreco and Griffin, pp. 51-53; Tusas, p. 38; Yergin, pp. 114-115, 117-118.

⁴⁹ Bullock, pp. 20, 28-29.

⁵⁰ Tusas, pp. 33-34.

US Lend-Lease to the USSR had included 4,455,818 tons of food and deliveries continued until September 1945 - Albert L. Weeks, *Russia's Life-Saver: Lend-Lease Aid to the U.S.S.R. in World War II* (Lanham: Lexington Books, 2004) pp. 141-143.

⁵¹ Tusas, p. 44.

American sources and paid for in dollars. The Anglo-Americans came to realize that they were now funding the USSR indirectly whilst meeting the costs of feeding their German populations. Furthermore, as is discussed later, dollar expenditure was especially hard on Britain.⁵²

Reparations were a source of friction throughout the period and not entirely because of the food ramifications.⁵³ Immediately after its capture the Soviets started stripping their own zone and doing so without maintaining accounts.⁵⁴ Moreover, during the time the Soviets occupied the western sectors of Berlin, they officially and privately plundered much of it, including the most modern power station, Berlin West, in the British Sector.⁵⁵ The Reparations Commission achieved little although it concluded that there was no justification for the Soviet claim for US\$10 billion.⁵⁶ Davison suggested that by the end of 1948 and including the parts of Germany transferred to the USSR and Poland, the Soviets (who were responsible for paying Poland's claims) had received far in excess of US\$10 billion.⁵⁷ Between 1945 to 1947 reparations may have added 10% to the Soviet national income.⁵⁸

On 25 July 1946 the British Cabinet agreed in principle to Bevin's proposal to halt reparations from the Northern Zone and to pool resources to restart German production as Britain could no longer afford the cost of keeping them alive.⁵⁹ During 1945-1946 the British expended £80 million supporting the 22 million Germans in its

⁵² Arnold-Forster, pp. 24-25; Nicolas Lewkowicz, *The German Question and the Origins of the Cold War* (Milan: IPOC di Pietro Condemi, 2008) p. 103; Miller, *To Save a City* (Texas A&M) p. 5; Harry S. Truman Library and Museum 'Oral History Interview with General Lord Robertson'; Tusas, pp. 33-34, 44.

⁵³ Harry S. Truman Library and Museum, Independence MO, Brief 7 January 1949, Elsey Papers <www.trumanlibrary.org/whistlestop/study_collections/berlin_airlift/large/documents/index.php?documentdate=1949-01-07&documentid=10-6&studycollectionid=Berlin&pagenumber=1> [accessed 1 December 2011].

⁵⁴ Bullock, p. 20; Tusas, pp. 38, 80.

⁵⁵ AP3257, p. 3.

⁵⁶ Tusas, pp. 38, 67.

⁵⁷ Davison, pp. 24-25.

⁵⁸ Alan S. Milward, *War, Economy and Society 1939-1945* (London: Allen Lane, 1977) [English edn.] p. 335; Till Geiger, *Britain and the Economic Problem of the Cold War* (Aldershot: Ashgate, 2004) p. 300; Tusas, p. 67.

⁵⁹ Bullock, pp. 309-310.

zone and this sum had simply 'staved off disaster'. The total Anglo-American cost was nearly US\$600 million.⁶⁰ By the summer of 1946 Soviet reparations from western Germany's capital equipment had been stopped.⁶¹ At the 1947 Moscow CFM Bevin said that the Soviets 'loot Germany at our expense'.⁶² Marshall's phraseology was less terse but contained the same message⁶³, the USA was not prepared to pour resources into western Germany to satisfy Soviet demands for reparations and the priority had to be making Germany able to feed and support itself⁶⁴. A Foreign Office paper, reflecting Bevin, in August 1946 stated 'Russia hopes to get into the Ruhr while keeping us out of the Eastern Zone.' and Davison argued that reparation demands were really a means to gain the Soviets a major voice in western Germany.⁶⁵ On 24 March 1947, Bevin told Stalin that the Ruhr would only be placed under four-power control if all of German industry was. Given the hardening American position on Poland's unilaterally aligned boundaries and Bevin's personal view from the outset, Germany in this context probably would have meant '1937 Germany'.⁶⁶

In 1947 Marshall considered Europe to be in a desperate position. Lord Franks (Chairman of the Committee of European Economic Co-operation) concurred to a considerable degree: 'in the spring of 1947 the economic and social state of western Europe was far graver than in the thirties'.⁶⁷ Claims of dire conditions in Europe helped to ensure the European Recovery Program (The 'Marshall Plan') was pushed

⁶⁰ J. Bowyer Bell, *Besieged* (New Brunswick NJ: Transaction Publishers, 2006) p. 253; Bullock, p. 150; Hennessey, *Never Again*, p. 287.

⁶¹ Yergin, p. 227.

⁶² Yergin, pp. 296-300.

⁶³ Bullock, pp. 378.

⁶⁴ Yergin, pp. 296-300. Between 1 January through 30 April 1947 the Americans and the British had imported US\$ 163 million worth of food into Germany - Bullock, p. 389. Milward argued that France as well as the Soviet Union was taking current production as reparations that should have paid for the food that the other two powers were having to import - Alan S. Milward, *The United Kingdom and European Community: the rise and fall of a national strategy, 1945-1963* (London: Cass, 2002) p. 15.

⁶⁵ Bullock, p. 310; Davison, p. 25.

⁶⁶ Bullock, pp. 25, 267, 384-385.

⁶⁷ Alan S. Milward, *The Reconstruction of Western Europe 1945-1951* (London: Methuen University Paperback, 1987) pp. 2-3.

through expeditiously. Alan Milward, however, argued differently. There was a severe fall in gold and foreign currency reserves and acute balance of payments difficulties, but investment profits and employment were high and aside from in Germany, no one was in danger of starving. The weakness with his view is that because of the state of European agriculture post-war more food had to be imported from dollar sources and as he admitted, there were difficulties with balances of payments and accumulating dollars.⁶⁸ Historians debate the precise American objectives behind the Marshall Plan but it cannot be denied that it assisted western European economic growth and avoided western European nations ending: 'their nascent booms in the pivotal year of 1947 when dollar famine and balance of payments problems caused nightmares in their finance ministries'.⁶⁹

European recovery required German recuperation and that involved currency reform as well as the revitalization of the Ruhr and the Marshall Plan.⁷⁰ The western German "west mark"⁷¹ was introduced on 18 June 1948 to replace the hyper-inflated Reichmark.⁷² A successful upturn would mean that the challenges of feeding its population could then pass to Germans. Resurgence also needed western Germany to have a place in Europe other than as its pariah. It required the formation of a West German nation within the Western Bloc. The Soviets also recognised Germany's importance in Europe but their view was that if it could not be united under communism, it should be divided into a strong communist east and a weak west.⁷³

⁶⁸ Hennessy, *Never Again*, pp. 292-297, 343-344; Milward, *The Reconstruction of Western Europe*, pp. 2-55.

⁶⁹ Hennessy, *Never Again*, pp. 296.

⁷⁰ Arnold-Forster, pp. 24-25, 34-42; Bullock, pp. 573, 607, 635-6; Bob Clarke, *10 Tons for Tempelhof: The Berlin Airlift* (Stroud: Tempus, 2007) pp. 54-55; Davison, p. 20; Miller, *To Save a City* (Texas A&M) pp. 16-17; Tusas, pp. 91-92, 132-136, 151, 300-303; Yergin, pp. 334, 368-368, 388.

⁷¹ Both the eastern zone currency and the western one were called Deutschemarks at the time. This thesis avoids confusion by calling one "west mark" and the other "east mark" - terms that were used at the time.

⁷² Arnold-Forster, pp. 24-25, 33; MacDonogh, p. 529.

⁷³ Davison, pp. xi, 18-22, 91, 93-94, 125; Norman Stone, *The Atlantic and its Enemies: A History of the Cold War* (London: Penguin, 2011) p. 43; Tusas, pp. 138-140; USNA, Record Group 319, Army Staff, Plans and Operations Division, Decimal File 1946-48, Box 36, 'Facts Bearing on the Problem', brief to Wedemeyer 18 June 1948.

The Soviets prevented the new west marks circulating in their zone which they claimed to include Berlin⁷⁴ and countered by introducing the 'tapetenmark' ('wallpaper mark') as the sole currency for Berlin. The Western Powers responded by releasing the Berlin mark ('B-mark') and set about trying to resolve the currency dispute as the way to end the Blockade.⁷⁵ In fact as early as 3 July 1948 the Soviet Military Governor, Marshal Vasily Sokolovsky, made clear that the real issue was the Western Powers plans for western Germany, a point reiterated by Stalin on 23 August 1948.⁷⁶

Thus the objective of the Blockade was not the local currency dispute. It was to prevent the creation of a West German government and western German economic recovery. If that could not be achieved, it was to include western Berlin in the eastern zone.⁷⁷ The aim was not to evict the Americans and British from the city although there was always the hope that they would lose their nerve and pull out with the resultant possibility of the progressive collapse of western Germany and then western Europe.⁷⁸ Had the Blockade succeeded it would undoubtedly have adversely affected the confidence of the newly created Western Union (Treaty of Brussels 17 March 1948) and have impinged on the subsequent Atlantic Alliance (4 April 1949). Essentially the Soviet targets were, as Stalin said in August 1948, to reverse the 1948 (Six-Power) London Recommendations (notably on control of the Ruhr and future German government).⁷⁹

Warner's 1944 conclusion that the Soviets worked through left-wing governments and interference in a country's internal affairs to expand their influence has been

⁷⁴ Davison, p. 91; USNA, Record Group 319, Army Staff, Plans and Operations Division, Decimal File 1946-48, Box 36, 'Facts Bearing on the Problem', brief to Wedemeyer 18 June 1948.

⁷⁵ Bullock, p. 573; Davison, pp. 94, 125; MacDonogh, p. 529; Tusas, pp. 139-140.

⁷⁶ Davison, pp. 123, 159-160, 237-249; Michail M. Narinskii, 'The Soviet Union and the Berlin Crisis', in *The Soviet Union and Europe in the Cold War, 1943-53*, ed. by Francesca Gori and Silvio Pons (Basingstoke: Palgrave, 1996) pp. 65-71.

⁷⁷ Davison, p. 18; Miller, *To Save a City* (Texas A&M) p. 16; Tusas, pp. 97-98, 151, 344; Yergin, p. 372.

⁷⁸ Arnold-Forster, pp. 35-36; Bullock, p. 547; Davison, p. xi.

⁷⁹ Bullock, pp. 547, 574; Davison, pp. xi, 18-19; Peter H. Merkl, *The Origin of the West German Republic* (New York: Oxford University Press, 1963) pp. 18-19; Tusas, pp. 97-98, 129-131, 151, 300-303, 344; Yergin, p. 372.

mentioned earlier. France had many difficulties. She had been defeated and occupied by Germany which she now wanted to keep weak; she had been included in the "Big-Four" under sufferance, and her democratic forums included substantial communist representation as well as right wing parties with near-xenophobic views about France's greatness.⁸⁰ The Italian communist party was growing and was expected (wrongly) to win the April 1948 election and other countries were under threat.⁸¹ The communist coup in Czechoslovakia during February-March 1948 emphasised even more the need for a firm stance across the West.⁸² Brookings Institute analysts stated that after the coup: 'little doubt remained in Western minds that communist ambitions could only be checked through the evidence of superior power'.⁸³ Thus the US Congress speeded up approval of the 'Economic Cooperation Act of 1948' (sometimes termed the European Recovery Act to link with the European Recovery Plan) which was signed into law by the President on 3 April 1948, with its appropriations approved in June 1948.⁸⁴ The Benelux countries, France and Britain signed the Western Union mutual defence treaty on 17 March 1948 and, more significantly, the Americans, Canadians and British started talks exploring an Atlantic pact on 22 March 1948.⁸⁵ The threat of the spread of communism had stiffened American and British resolve which was reflected in their response to the Blockade (even if they were unclear about its precise cause).

The final answer sought in this section concerns access rights to Berlin. Superficially, the Soviets were able to stop movement across their zone without risk of war because there was no written agreement. The decision makers chose not to place it on the Yalta agenda and so three-Power formal agreement was not achieved

⁸⁰ Bell, pp. 251-252, 259; Bullock, pp. 144-148, 496; Tusas, p. 96.

⁸¹ Bell, pp. 251-252, 255-256, 258-259; Bullock, pp. 543-546, 599.

⁸² Bell, p. 256; Central Intelligence Agency, 'The March Crisis and the Berlin Airlift' <www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/on-the-front-lines-of-the-cold-war-documents-on-the-intelligence-war-in-berlin-1946-to-1961/art-4.html> [accessed 21 February 2011]; Tusas, pp. 96-98; Yergin, pp. 349-355.

⁸³ Miller, *To Save a City* (Texas A&M) p. 19.

⁸⁴ Yergin, pp. 354, 357; USNA, 'The Marshall Plan', *Featured Documents*, <www.archives.gov/exhibits/featured_documents/marshall_plan/> [accessed 23 May 2011].

⁸⁵ Tusas, pp. 97-98.

before the war's end. During the war the Soviets had adopted the reassuring line that 'Anglo-American presence in Berlin automatically carried with it the right of access'.⁸⁶ During the 'Little Lift' in April 1948 Brigadier General Charles Gailey did try to resolve the access issue by writing to the Soviet Deputy Military Governor and contending that: 'The agreement under which we entered Berlin clearly provided for our free and unrestricted utilization of the established corridors. This right was a condition precedent to our entry into Berlin and our final evacuation of Saxony and Thuringia'. The Soviets rejected his contention.⁸⁷

There was a written arrangement for water transport. The agreement was between the British and the Soviets which the latter persistently ignored. The Soviets included water transport in the Blockade and given the importance of barge traffic in the supply of Berlin, it must be assumed that the situation would have been no different if the agreement had been an ACC one.⁸⁸ Giangreco and Griffin cited a Clay statement made in 1950: 'that I doubt very much if anything in writing would have done any more to prevent events which took place than the verbal agreement which we made'.⁸⁹ More than 30 years later Harrington also remained sceptical about what effect written agreements would have had pointing to the obvious deficiency that ground communications crossed Soviet controlled territory: '[zonal negotiations in 1944] could have provided at best written affirmations of Western transit. Such accords, without Western control of access routes, would have afforded no greater protection against breach of faith than oral promises. Western vulnerability in Berlin rested on geography, not on whether agreements with Moscow were written or oral'.⁹⁰ As all surface transport was under tight Soviet control, it could be cut for technical reasons at any time without serious risk of escalation into war. Even the most determined convoy, train or barge can be stopped by civil engineering.

⁸⁶ Tusas, pp. 12-14.

⁸⁷ Robert Jackson, *The Berlin Airlift* (Wellingborough: Stephens, 1988) pp. 36-37. The Western Allies had also liberated parts of Mecklenburg - Giangreco and Griffin, p. 25.

⁸⁸ Tusas, p. 48.

⁸⁹ Giangreco and Griffin, p. 28.

⁹⁰ Harrington, 'The Berlin Blockade Revisited', pp. 89-92.

AP3257 asserted that: 'The use of the air corridors to Berlin had been guaranteed in writing by quadripartite agreement in November 1945.'⁹¹ The ACC had approved three air corridors between Berlin and Hamburg, Buckeburg, and Frankfurt-on-Main in western Germany on 30 November 1945. Each was 20 miles wide and allowed the use of all airspace up to 10,000 feet above mean sea level. The corridors met in a Berlin control zone, a circle with a radius of twenty miles from the ACC building, within which all traffic movements were directed by the four-Power Berlin Air Safety Centre. After initial Soviet objection, it was agreed that commercial aircraft might use the corridors and traffic should not be limited to those serving the occupation garrisons. It too was a written approval but it was different.⁹² Rules for air safety within the corridors were codified October 1946 and then enforced by the Air Directorate.⁹³ The Soviets could not breach it under the pretext of temporary administrative difficulties or engineering maintenance.

Most sources mentioned the 10,000 feet ceiling to the corridors. However, Giangreco and Griffin wrote that the right to fly above that altitude had never been yielded and quoted Paul R. Voitti of the USAF Academy in 1984: 'The October 1946 Flight Rules do address the possibility of imposing "airspace restriction", but the "appropriate authority" is left unspecified' and 'because the Western allies view use of the corridors as their right, they have been somewhat reluctant to take "privileges" offered by the Soviets (flying above 10,000 feet when, indeed, they have never conceded their right in principle to fly above that altitude)'. In 1948-1949 the Airlift flight profiles and the aircraft deployed meant that flying above 10,000 feet was not of great advantage.⁹⁴

⁹¹ AP3257, p. 4.

⁹² AP3257, pp. 20, 217; Davison, pp. 33-35; Tusa, pp. 48-49.

⁹³ AHB, 'Allied Control Air Directorate – Flight Rules for Aircraft flying in Air Corridors in Germany and Berlin Control Zone – 2nd Review', DAIRP(45)71 22 October 1946.

⁹⁴ Giangreco and Griffin, pp. 99, 212.

In 1989 John Tusa agreed that the 10,000 foot ceiling was not written down but through usage had become 'common law' - John Tusa, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989) pp. 85-86. TNA, AIR 2/15259, Cooper 21 April 1959 'undoubted right to fly at any altitude' and A34/CINC RAF Germany 17 April 1959 did not accord with Tusa but nevertheless, found plausible reasons why it would be foolish to force the issue with the Footnote continues on next page.

When the three narrow air corridors were established, the Soviets would have believed they were making a goodwill gesture that cost them nothing and gained greater safety for their own aircraft and privacy for their military installations.⁹⁵ The agreement was intended for flight safety purposes and gave the Soviets access to modern flight safety techniques and air navigation equipment.⁹⁶ It is most unlikely that in 1945 anyone would have conceived how important the corridors would become three years later. Indeed Davison cited an unnamed US diplomat's memory that in the early days of the occupation the Western powers had offered land on the eastern boundary of Tempelhof airport to the Soviets in return for territory in the north of the city. Had this arrangement taken place, aircraft transits could have been blocked simply by erecting tall buildings.⁹⁷ The Soviets attempted without success to amend the agreement subsequently. In 1948, prior to the Blockade, they proposed that corridor air traffic should be limited to the needs of the occupation forces; instrument flying should be banned, and prior flight clearance should be obtained. They also suggested that the airport for western civilian aircraft was shifted to the Soviet Sector and even that all military aircraft be relocated to Dalgow in eastern Berlin. The Western Powers sagely either rejected or ignored these proposals.⁹⁸

There had been instances of Soviet military aircraft flying close to western transport aircraft ("buzzing") in the corridors since late 1946. This escalated on 5 April 1948 when a British European Airways [BEA] Vickers Viking on landing approach to RAF Gatow was hit by a 'stunting' Soviet Yakovlev Yak-3 fighter. Both planes crashed with total loss of life.⁹⁹ The concern that the Viking incident and the concurrent 'Little Lift' caused was encapsulated by Cyril Falls. He wrote that:

This is an ugly and dangerous situation. The Western Allies hold in their sectors only very small garrisons, which are surrounded by the vast forces still retained in the Russian Zone. From the purely physical point of view the Russians could at any moment force their former Allies to quit Berlin

Soviets.

⁹⁵ Davison, pp. 148-149; Tusas, p. 49.

⁹⁶ Davison, pp. 33-37.

⁹⁷ Davison, p. 31.

⁹⁸ Davison, pp. 65-68, 154-155; Narinskii, p. 65; Tusas, pp. 117-118.

⁹⁹ Davison, pp. 65-68; R Jackson, p. 37; Tusas, pp. 116-117.

provided they were prepared to face the consequences of such action. Another consideration is that an itching finger on the trigger might cause bloodshed and bring about an international incident of the gravest kind.¹⁰⁰

Both the Soviets and the British produced reports blaming the other for the crash and the former reinstated their earlier proposals to curb air travel, even implying the corridors existed solely by Soviet grace and favour. The Anglo-American response was the clear willingness by both military governors to allocate fighter protection to aircraft in transit which emphasized that USA and Britain would guard firmly their air passage rights and implied that war would be risked by bringing down unarmed transport aircraft flying legal routes.¹⁰¹ Miller cited two intelligence sources to support the view that the Soviets had intended to impose an air blockade but were deterred from doing so.¹⁰² It appears probable that the Soviets recognised attacks on aircraft could be a *casus belli* and thus accepted there was no way to impose an air embargo.¹⁰³ As the subsequent chapters reveal, the Soviets may have harassed Airlift aircraft but they stopped short of seriously risking aircraft safety.¹⁰⁴ This may have reflected a desire to avoid escalation but as later chapters explore, it might also suggest a belief that supply by air would not succeed.¹⁰⁵

Thus how the Blockade was imposed rested not on written agreements but on risk of war. To return to Cyril Falls's quotation, whilst the Western garrisons were small, they were sufficient to deter the Soviets (and their Eastern Zone paramilitary forces)

¹⁰⁰ Bob Clarke, p. 52-53 sourced from an article in the 17 April 1948 *Illustrated London News*.

¹⁰¹ Davison, pp. 65-68, 154-155; R Jackson, pp. 43, 129; Tusas, pp. 116-118; discussion Professor Philip Sabin/Keen 26 April 2011.

¹⁰² Miller, *To Save a City* (Texas A&M) pp. 25-26.

¹⁰³ Davison, pp. 65-68, 154-155; Victor Gobarev, 'Cold War Crises: Soviet Military Plans and Actions during the First Berlin Crisis, 1948-49', paper edited by David M. Glantz, *The Journal of Slavic Military Studies*, Vol. 10, No. 3, September 1997 p. 7; R Jackson, p. 129; Tusas, pp. 116-118; discussion Professor Philip Sabin/Keen 26 April 2011. Wilfried Loth, trans. Robert F. Hogg, *Stalin's Unwanted Child: The Soviet Union, the German Question and the Founding of the GDR* (Basingstoke: Macmillan Press, 1998) p. 93 argued that because there was 'no trace in the files', no consideration was given to using force to block the Airlift.

¹⁰⁴ Gobarev, pp. 19-20, 22; R Jackson, pp. 129-130; MacDonogh, p. 527.

¹⁰⁵ Davison, pp. 154-155; R Jackson, pp. 129-130; Vladislav M. Zubok, *A Failed Empire: the Soviet Union in the Cold War from Stalin to Gorbachev* (Chapel Hill: University of North Carolina Press, 2007) p. 76.

from using force to achieve their aims in Berlin without the risk of war.¹⁰⁶ By mid-1948 the British, French and Americans were extremely weak numerically both in western Germany and globally.¹⁰⁷ Only in the air did the Americans have some qualitative advantages and these declined when the Mikoyan-Gurevich MiG-15, the new Soviet air superiority jet fighter, entered service in October 1948. If a conventional war had started in 1948, it would have been disastrous for western Europe no matter what the global long-term outcome would have been.¹⁰⁸

America's atomic capability would have been less significant than might have been expected. She had only a dozen useable atomic bombs in spring 1948 with an equally limited delivery capability none of which was based in Europe.¹⁰⁹ She was undecided how to use the weapon and was 'unlikely' to deploy it to break the Blockade.¹¹⁰ Nevertheless, the positioning of (non-nuclear) B-29 bombers in England was an excellent propaganda ploy.¹¹¹ It was a reminder about Western airpower potential and its ease of deployment which the Airlift and the parallel reinforcement of the air forces in the American and British zones further emphasized. It indicated to the Soviets and to the Germans that the Americans and the British were willing to defend their position in Berlin.¹¹² However, given their spy network of American, British and French traitors, it may not have frightened the Soviets to

¹⁰⁶ Davison, pp. xiii, 150.

¹⁰⁷ Bullock, pp. 579-581, 583, 589; Davison, pp. 74, 111, 150, 155; Hansard, 'Air Estimates, 1952-53, and Air Supplementary Estimate, 1951-52', HC Deb 18 March 1952, Vol. 497, cc2105-72; Hennessy, *Never Again*, Chap. 7.

¹⁰⁸ R Jackson, pp. 37-41; Antony L. Kay, *Turbojet History and Development 1930-1960 Volume 2: USSR, USA, Japan, France, Canada, Sweden, Switzerland, Italy and Hungary* (Ramsbury Wilts: Crowood, 2007) pp. 52-53; Miller, *To Save a City* (Texas A&M) pp. 29-31; The National Museum of the USAF, *Fact Sheets* (Wright-Patterson AFB OH) <www.nationalmuseum.af.mil/factsheets, updated 11 February 2011> generally; Tusas, pp. 173-174; Yergin, pp. 379-382.

¹⁰⁹ Bob Clarke, p. 110; Hennessy, *Never Again* p. 353; Miller, *To Save a City* (Texas A&M) pp. 47-48; Shlaim, p. 239.

¹¹⁰ Davison, pp. 155-157; Gobarev, p. 7 - Gobarev contended that Stalin's biggest concern was the US nuclear monopoly and at pp. 20-21 that his research had been unable to confirm whether the Soviets were aware that the B-29s deployed to the UK were neither nuclear armed nor nuclear capable.

¹¹¹ Davison, p. 285.

¹¹² Davison, p. xiii; Milward, *The United Kingdom and European Community*, p. 21.

the extent that was hoped.¹¹³

The Blockade was imposed gradually with surface communications between Berlin and the western zones becoming progressively more difficult possibly reflecting the highly dangerous "game of chicken" that both sides were playing. *AP3257* recorded the 24 January 1948 as the start when the Berlin-Bielefeld night train was detained for 11 hours in the Eastern Zone. Numerous incidents continued until land movement of freight and passengers effectively ceased on 24 June 1948. Waterway traffic was similarly harassed over the same period and the last barges reached western Berlin on the 27th.¹¹⁴ Harassment peaked temporarily on 1 April 1948. The Americans responded by airlifting food, materiel and passengers into and out of Berlin in support of the western garrisons and occupation agencies. In what was later termed the 'Little Lift', starting on 2 April, the United States Air Forces in Europe [USAFE] carried over 1000 tons in April compared with 310 tons in March. Although the April crisis ended on 10 April, Little Lift continued until Operation VITTLES started on 26 June 1948.¹¹⁵ USAFE deployed 25 Douglas C-47s whilst the RAF's effort was two Douglas Dakotas and an Avro Anson communication aircraft.¹¹⁶

Little Lift gave the USAFE and the US Army Transport Corps a learning opportunity prior to the Berlin Airlift. It also speeded up completion of the concrete runway at RAF Gatow. In spite of ongoing but momentarily reduced traffic harassment, tens of thousands of tons of coal were shipped into Berlin by rail and barge and stocks of food staples were built up. Work reconstructing the West Berlin Power Station in the British Sector at last started. The Soviets concluded that the Little Lift had been futile which may have shaped their early reactions to the Airlift.¹¹⁷

¹¹³ Stone, *The Atlantic and its Enemies*, p. 4.

¹¹⁴ *AP3257*, pp. 3-4.

¹¹⁵ *AP3257*, p. 279; Bob Clarke, pp. 49, 53; R Jackson, p. 36; Miller, *To Save a City* (Texas A&M) pp. 21, 26.

¹¹⁶ Miller, *To Save a City* (Texas A&M) p. 21; Tusas, p. 108.

¹¹⁷ Bob Clarke, pp. 53; Richard Collier, *Bridge Across the Sky: The Berlin Airlift and Blockade, 1948-1949* (New York: McGraw-Hill, 1978) p. 16; Davison, p. 76; Miller, *To Save a City* (Texas A&M) pp. 21-23.

The Little Lift triggered contingency planning. Headquarters British Air Forces of Occupation (Germany) [HQ BAFO] and Headquarters Transport Command [HQ TC] formulated Operation KNICKER which intended to airlift into Berlin 65 tons per day. It was not intended to supply the Berliners and there appears to have been no formal planning about supporting the civilian population. Rainsford recorded: 'Planning in 1947 included emergency supply of the small British garrison in Berlin but not the western Berliners'.¹¹⁸ Without the experience of German behaviour in the USSR during campaigns such as the 900 day siege of Leningrad, western officials did not believe the Soviets would cut off food from the civilians as a means to achieve their objectives (Chapter 3 and Appendixes 1 and 2).

The Blockade was unlikely to have been instigated by middle level officials raising the ante following a beneficial occurrence such as a bridge repair. The Soviet approach to earlier traffic harassment, the inherent dangers in using initiative in Stalin's USSR and the elements involved point towards it being authorised and monitored at the highest levels. Close control, moreover, would have reduced the risk of escalation into open warfare.

THE WESTERN BERLINERS

The previous section, "Events Leading to the Berlin Airlift", did not provide a picture of life for the Germans in western Berlin and it is too easy to take the view that their commitment was irrelevant to whether the Airlift failed or succeeded. This section and Chapter 4 corrects that. In July 1945 Berlin was a city of the old, the very young, women and cripples and this imbalance would continue into the Blockade.¹¹⁹ Davison rightly argued that without the clear support of western Berlin's civilian population during the blockade, which was given in spite of Soviet threats and promises, the Anglo-Americans would have failed to break the blockade.¹²⁰ The impact of two months' Soviet occupation in 1945 with its rapes and private and official plunder was effectively described at the time by an unnamed commissar as:

¹¹⁸ AP3257, p. 5 and Appendix A annexure 1; F. F. Rainsford, *Memoirs of an Accidental Airman* (London: Harmsworth, 1986) pp. 101-102.

¹¹⁹ Bullock, p. 376; Tulas, pp. 41, 43, 79.

¹²⁰ Davison, pp. xiii-xiv.

'This will cost us a million roubles a day - political roubles'¹²¹ or during the Airlift, and with the traditional black humour of the Berliners, 'Lieber POM als Frau komm'¹²². (POM was dehydrated potato supplied in the Airlift and 'Lieber POM als Frau komm' liberally translates as better Airlift rations than being raped again by Soviet soldiers.¹²³)

The Soviet actions in the first years of occupation assured the Western powers of almost unanimous support from the Berliners in the western sectors and the co-operation of most German political leaders in Berlin.¹²⁴ Not that the Berliners were overly enamoured with the Western Powers. Donovan's summary of their attitude seems most appropriate: neither the Soviets nor the Anglo-Saxons but if they must be occupied then better the latter.¹²⁵ (The French, according to MacDonogh, were: 'something of a joke, conquerors who had played no part in the conquest'.¹²⁶)

When the Anglo-Saxons arrived in Berlin in 1945 the Berliners were treated as all being defeated Nazis (even up to the Blockade as 'third or even fourth class citizens') and the rapes and plunder continued. 20% of the houses had been destroyed and a further 50% were uninhabitable. The best of the rest were commandeered by the occupiers. Housing and food remained a problem throughout. The UN considered an adult needed 2,650 calories per day whereas in the western occupied parts its best was 1,500 and at times it fell below 1,000. Clay was cited as saying 'There is no choice between being a communist on 1,500 calories per day and a believer in democracy on 1,000 calories'.¹²⁷ Such were the conditions that a mythical story

¹²¹ Tusas, pp. 23-24

¹²² Frank Robert Donovan, *Bridge in the Sky: The Story of the Berlin Airlift* (New York, David McKay, 1968) pp. 87, 178.

¹²³ Davison, p. 324.

¹²⁴ Davison, pp. xiii-xiv.

¹²⁵ Donovan, pp. 80-81.

¹²⁶ MacDonogh, p. 124. This view of the French was not completely correct. The 1st French Army participated in the attack on Germany during 1945 - Jeffrey J. Clarke, and Robert Ross Smith, *U.S. Army in World War II, Riviera to the Rhine* (Washington: United States Army Center of Military History, 1993) pp. 448-452 and Charles B. MacDonald, *U.S. Army in World War II, The Last Offensive* (Washington: United States Army Center of Military History, 1993) p. 433.

¹²⁷ Donovan, pp. 28-29, 81, 87, 165-166, 182; Tusas, pp. 44-45, 47, 65-66 (for quotation), 76-77, 88, 91, 98.

about cannibalism was given credence and widely circulated.¹²⁸ Table 2.1 displays the eastern and western Berliners' entitlements for the period before the Airlift. Heavy workers' rations were limited to 4% of the population and those for workers to 30%.¹²⁹ Food was not the only shortage. There was little domestic fuel and electricity was limited.¹³⁰ On the other hand, because unemployment was high there was time for queuing, foraging and trading in the black and swap markets.¹³¹

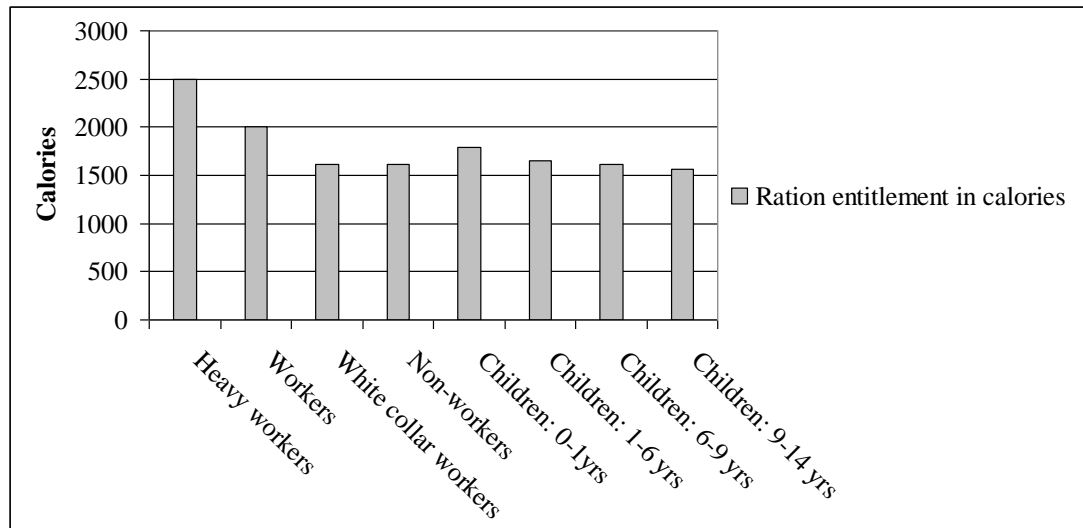


Table 2.1: Daily Food Rations before the Blockade

Non-communist German officials (and Western ones too) were subjected to marathon meetings, veiled threats and irritating surveillance to wear down their resistance to Soviet demands.¹³² The communists sought positions where authority could be exercised in the city's central municipal government and its borough administrations which they seldom surrendered until compelled to by one or more of the occupying powers.¹³³ Eventually relocation of city government offices to the

¹²⁸ Donovan, pp. 23-24.

¹²⁹ Control Commission for Germany (British Element), *Notes on the Blockade of Berlin 1948: from a British viewpoint in Berlin* (Berlin: Printing and Service Control Commission for Germany (BE), 1949) p. 18.

¹³⁰ Davison, p. 38; Donovan, pp. 28-29; Tusas, p. 76.

¹³¹ Donovan, pp. 18-23; Tusas, p. 45.

¹³² Davison, pp. 114, 169-170.

¹³³ Davison, pp. xi-xii, 51, 32-33, 205-207.

western sectors became essential to ensure municipal administration by the democratically elected Magistrat continued.¹³⁴

The western Berlin political and trades union leaders and many of the municipal employees, were able and dedicated. They were willing to run personal risks, and were not (sufficiently) intimidated by Soviet threats and actions, including kidnapping to the east.¹³⁵ Progressively in the western sectors the democrats were able to take control of most of the civil administration, the police, political parties, and trade unions although sometimes only after the Blockade started.¹³⁶ The democrats were able to prevent the communists interfering with the Airlift administratively or by initiating a general strike and they convinced the population that freedom was worth striving for.¹³⁷ The latter was not an insignificant task given that the Anglo-American track record pointed to them either quitting the city or compromising unfavourably with the Soviets.¹³⁸

Whilst initially apathetic about their role in the Blockade, the western Berliners had shown early political self-confidence and opposition to the Soviets.¹³⁹ On 31 March 1946 in a 75% turnout, 90% of the western sectors' Social Democrat Party [SPD] members voted against its leadership's proposal to amalgamate with the Communist Party [KPD].¹⁴⁰ On 20 October 1946, in a 92% turnout, 48.7% voted for SPD, 31.5% for the other two democrat parties, and 19.8% for the Social Unity Party (the party resulting from the Soviet imposed merger of the Eastern Zone and Soviet Sector SPD with the KPD).¹⁴¹ As recorded above, citing the case of the Oberbürgermeister, the Berliners' electoral intentions could be overruled by one or more occupiers when it opposed their interests.¹⁴²

¹³⁴ Davison, pp. 209-219.

¹³⁵ Davison, pp. xiv, 42, 48-50, 52, 114-115, 169-170.

¹³⁶ Davison, pp. 41-43, 51-62, 78-81, 115, 137, 171-177, 185-187; Tusas, pp. 194-195.

¹³⁷ Davison, pp. 44, 46-7, 56, 84-89, 102, 115, 137, 179-182.

¹³⁸ Davison, pp. 38, 47, 81-84, 87-89, 182-183.

¹³⁹ Davison, p. 38.

¹⁴⁰ Davison, p. 44.

¹⁴¹ Davison, p. 47.

¹⁴² Davison, pp. 47-53.

Opposition to the Soviets extended beyond the ballot box. On 18 March 1948 an independent democratic meeting was attended by 60,000 to 80,000 people and on 1 May 1948 the democratic trades unions held their own May Day mass meeting.¹⁴³ The Independent Union Organization was formed on 26 May 1948 after the Soviet controlled, communist stacked, Free German Trade Union Association refused to respect the outcome of its May membership elections.¹⁴⁴ On 22 June 1948 the Acting Mayor and her deputy rejected the Soviet directive to introduce the east mark as the sole currency in Berlin. Next day the City Assembly supported this in spite of the efforts of a communist-orchestrated mob supported by the Soviet-controlled police.¹⁴⁵ On 24 June Reuter spoke to a crowd of 70,000 people in the Hertha Stadium (in the French Sector) with a further 20,000 outside about Berlin issues including a plea for the world to aid the city 'in the decisive phase of the fight for freedom'.¹⁴⁶ The essential part played by the western Berliners during the Blockade is addressed further in Chapters 4 and 5.

BRITAIN 1945-1948

Using the published works of Bullock, Hennessy, and Milward, augmented by Government publications, the British section addresses the Country's financial position. The debts and other implications from six years of war; the wealth earning capability, and the needs and expectations of a population who believed they had won the war are considered. The received wisdom that Britain was bankrupt is investigated. Explanation is sought for the RAF's limitations during the Airlift (Chapters 5 and 6). The cost to Britain of the Airlift is looked into and, although doubts are raised about the official figures, evaluated in terms of its impact on people seeking to restart their lives after six years of war.¹⁴⁷

¹⁴³ Davison, pp. 84-87.

¹⁴⁴ Davison, pp. 59-60.

¹⁴⁵ Davison, pp. 93-98.

¹⁴⁶ Davison, pp. 100-102; Tusas, p. 142 (for quotation).

¹⁴⁷ Milward observed that economic history studies in Britain were either 'parochial' or were made from the sidelines by scholars pursuing some other discipline. To avoid this, selected secondary sources have been used - Alan S. Milward, *Studies in Economic History: The Economic Effects of the World Wars on Britain* (London: Macmillan, 1970) p. 49.

Events in Germany in 1948-1949 did not occur in isolation from the political, economic and social challenges facing post-war Great Britain domestically and internationally. There are many views about what Britain's position was financially, industrially and internationally between the end of the Second World War in 1945 and the Berlin Blockade in 1948-1949. Equally there are many opinions about what her options could have been. Hennessy described Britain in 1945 as 'morally magnificent but economically bankrupt' and went on to quote Paul Kennedy: 'the blunt fact that in securing a victorious outcome to the war the British had severely overstrained themselves, running down their gold and dollar reserves, wearing out their domestic machinery, and becoming increasingly dependent upon American munitions, shipping, foodstuffs, and other supplies to stay in the fighting'.¹⁴⁸

In 1942 Canada gave Britain a Can\$1,000 million gift and an interest free loan of Can\$700 million. 'Mutual Aid' was provided thereafter.¹⁴⁹ The USA supplied Lend-Lease. When the latter was withdrawn suddenly, 'unilaterally, without prior negotiation' and it seems without warning in August 1945, Britain needed dollar loans from the USA and Canada. She was 'a bankrupt and could not borrow on strictly commercial terms to fund a deficit which he [Keynes] believed would be about £1 billion in the first year of peace'.¹⁵⁰ Both countries helped financially and so maintaining positive relationships with them became crucial.¹⁵¹ Repayment of the Canadian loan continued after the war but all other debts between Britain and Canada were cleared by a single payment of Can\$150 million in the Anglo-Canadian post-

¹⁴⁸ Hennessy, *Never Again*, pp. 94, 116.

¹⁴⁹ Hansard: 'Financial Agreement with Canada', HL Deb 07 March 1946, Vol. 139, cc1215-7; 'Canadian Loans', HC Deb 11 March 1952, Vol. 497, cc1258-9.

¹⁵⁰ Hansard, 'Lend-Lease Contracts (Cancellation)', HC Deb 24 August 1945, Vol. 413, cc955-8; Hennessy, *Never Again*, pp. 42, 90, 94-97 (for quotations pp. 94-95); Milward, *War, Economy and Society*, Chap. 6, pp. 350-352.

¹⁵¹ Canada provided Can\$1.25 billion and the USA US\$4.34 billion (including a loan for the Lend-Lease settlement) - Hansard: 'Financial Agreement with Canada', HL Deb 07 March 1946, Vol. 139, cc1215-7; 'Anglo-American Financial and Economic Discussions', HC Deb 12 December 1945, Vol. 417 cc422-433; 'U.S. and Canadian Loans (Repayments)', HC Deb 07 February 1956, Vol. 548, cc1493-5; 'Canadian Loans', HC Deb 11 March 1952, Vol. 497, cc1258-9; Bullock, pp. 400, 718; Hennessy, *Never Again*, pp. 97-98.

war settlement.¹⁵² In 1945 Britain's final Lend-Lease bill was set at US\$650 million.¹⁵³ This appears generous until what Britain gave the USA during the war is recalled (antibiotics, the cavity magnetron, nuclear research, jet and piston engine technology). As Harold Wilson later wrote 'Had Churchill been able to insist on adequate royalties our post-war balance of payments would have been very different'.¹⁵⁴ (The Soviets refused to pay their Lend-Lease debts.¹⁵⁵)

British national income had been 62% of the USA's before the war but had fallen to just over 41% in 1948, albeit in part because of American wartime expansion.¹⁵⁶ By 1945, Britain had lost 25% of its pre-war wealth (£30,000 million) through internal disinvestment in non-essential wartime industries; selling overseas investments and the destruction of buildings, capital goods and shipping. Although these figures may have over-estimated the reduction by about five percent, they serve as indicators.¹⁵⁷ The American Lend-Lease Acts were passed only after Britain's net gold and dollar reserves were almost exhausted and investments in the USA had been surrendered.¹⁵⁸ As Table 2.2 below shows, British national debt across the world, including to the colonies, rose and payments were used in part indigenously to buy British companies and investments. The loss of overseas investments and merchant shipping meant that Britain's post-war invisible earnings were reduced substantially meaning that her exports now had to pay for much of her imports and for servicing her wartime debts. The net result was a shortage of US dollars; severe balance of payment crises, as

¹⁵² Hansard: 'Financial Agreement with Canada', HL Deb 07 March 1946, Vol. 139, cc1215-7; 'Canadian Loans', HC Deb 11 March 1952, Vol. 497, cc1258-9.

¹⁵³ Hansard: 'War Debts', HC Deb 28 February 2002, Vol. 380, cc1439-41w and 7 October 2003, Vol. 411, cc20-1w; Hennessy, *Never Again*, p. 97.

¹⁵⁴ Peter Hennessy, *Having it so Good* (London: Penguin, 2007) p. 144; Peter Hennessy, *Muddling Through* (London: Indigo, 1997) pp. 99-101; Harold Wilson, pp. 122-123 (quotation at p. 123).

¹⁵⁵ Geiger, p. 300.

¹⁵⁶ Geiger, p. 298.

¹⁵⁷ Geiger, p. 218.

¹⁵⁸ Hennessy stated that one third of the gold reserves were disposed and one third of the overseas assets were sold during the war - Hennessy, *Never Again*, pp. 42, 99. Milward gave US\$4.500 billion as being liquidated from total foreign investments of US\$22.905 billion - Milward, *The Economic Effects of the World Wars on Britain*, pp. 47-49; Milward, *War, Economy and Society 1939-1945*, pp. 71-72, 350-352.

shown in Table 2.3, and the eventual devaluation of the pound in 1949.¹⁵⁹

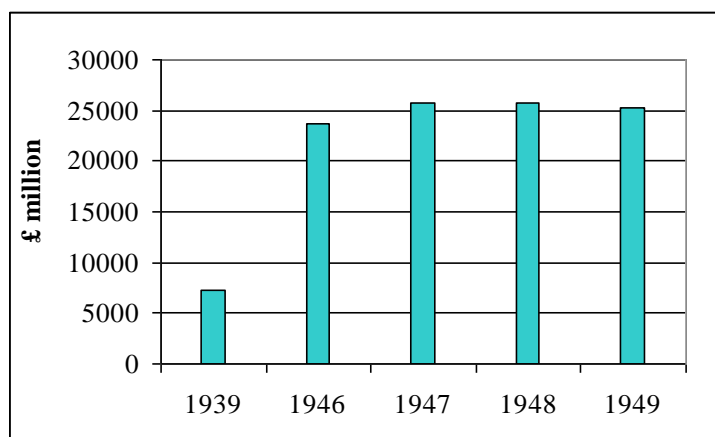


Table 2.2: Total National Debt

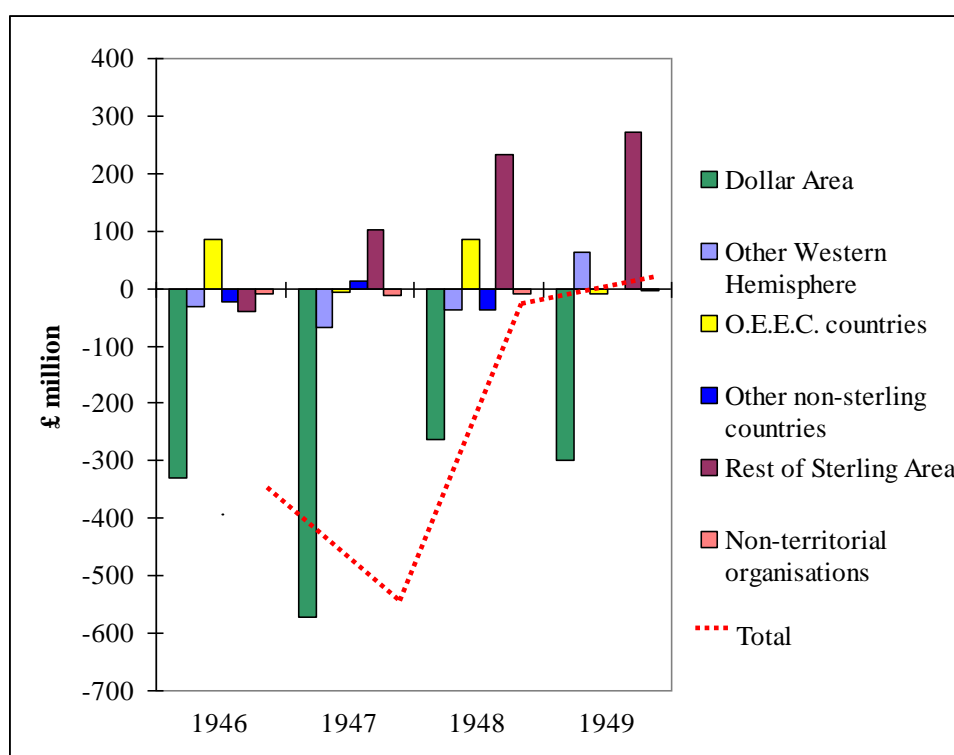


Table 2.3: Balance of Payments - Current Account

In July 1945 the Permanent Under-Secretary at the Foreign Office, Orme Sargent,

¹⁵⁹ Hansard, 'Anglo-American Financial and Economic Discussions', HC Deb 12 December 1945, Vol. 417 cc422-433; HMG, Central Statistical Office, *Annual Abstract of Statistics*, No. 88, 1938-1952 (London: HMSO, 1952) Tables: 217, 257, 269, 333-334; Hennessy, *Never Again*, pp. 93, 340, 366-376; Milward, *The Reconstruction of Western Europe*, pp. 38-40, 62; Milward, *War, Economy and Society*, pp. 334, 346, 349; OECD, 'Organisation for European Economic Co-operation (OEEC)' <www.oecd.org/general/organisationforeuropeaneconomicco-operation.htm> [accessed 14 May 2013].

argued that Britain could only remain a superpower if it led both western Europe and the Commonwealth.¹⁶⁰ However, because of her own economic difficulties she could not single-handedly ensure the defence of the Commonwealth and western Europe and the economic recovery of the latter. Thus, Sargent's strategies were doomed. Britain became involved in the creation of the Western Union and NATO but her principal energy in this area was expended persuading the USA to commit to the defence of Europe. Moreover, given that Britain's objectives were the Commonwealth and partnership with America, she wanted to save Europe but not to join it as the USA advocated.¹⁶¹ It was thus imperative that she portrayed herself as America's greatest and most sure ally with all that that implied.

In the second half of the 1940s because the Government (and the Opposition) had a lingering belief that Britain was still a world power (albeit one temporarily fallen on hard times)¹⁶² she pursued far too expensive, grandiose and worldwide foreign policies which were dependant on resources and influence (especially an Anglo-American relationship) which either did not exist or did so for a very short period. By 1945 her armed forces were far smaller than those of either the USA or the USSR, and none of her weapon systems were superior to those of the Americans and by 1947, as the defence votes were slashed, these weapons systems faded and their serviceability rates declined.¹⁶³

In her perceived post-war role as a great power, Britain expended her scarce resources on the Empire; occupying most of North Africa and the Levant, part of Austria, northwest Germany, Southern Persia, and Trieste; developing an indigenous atomic bomb (made more expensive by the USA reneging on the 1943 Quebec and 1944 Hyde Park wartime agreements); supporting the Greek Government and giving economic aid to Turkey, and maintaining an army of 74 infantry battalions (or

¹⁶⁰ Fernando Guirao, Frances Lynch, Sigfrido M. Ramirez Perez, eds., *Alan S. Milward and a Century of European Change* (New York: Routledge 2012) p. 111; Milward, *The United Kingdom and European Community*, p. 16; Neville, p. 258.

¹⁶¹ Hennessy, *Never Again*, pp. 91, 293, 342-343; Milward, *The United Kingdom and European Community*, pp. 5, 15-17, 21, 41.

¹⁶² Hennessy, *Muddling Through*, pp. 179-181; Hennessy, *Never Again*, pp. 87, 90-91.

¹⁶³ Hennessy, *Never Again*, pp. 87, 90-94, 342-343; Milward, *The United Kingdom and European Community*, pp. X, 2-3.

equivalent) and 29 armoured regiments, much of it overseas.¹⁶⁴ As Table 2.4 shows expenditure was substantially higher than pre-war and much of it was defence related.¹⁶⁵ Hennessy indicated that the total expenditure for atomic energy (effectively the atomic bomb) was 1946/7 £4.78 million (m); 1947/48 £11.09m; 1948/9 £17.03m, and 1949/50 £16.83 million. (The whole cost of the atomic bomb programme was £100m).¹⁶⁶ Hennessy cited Roy H. Jenkins which serves to sum up Britain's global position: 'The inheritance [by Clement Attlee in 1945] was bleak. Our nominal membership of the triumvirate of world power was guaranteed by our recent record. But it was as unsustainable as it was temporarily incontestable.'¹⁶⁷

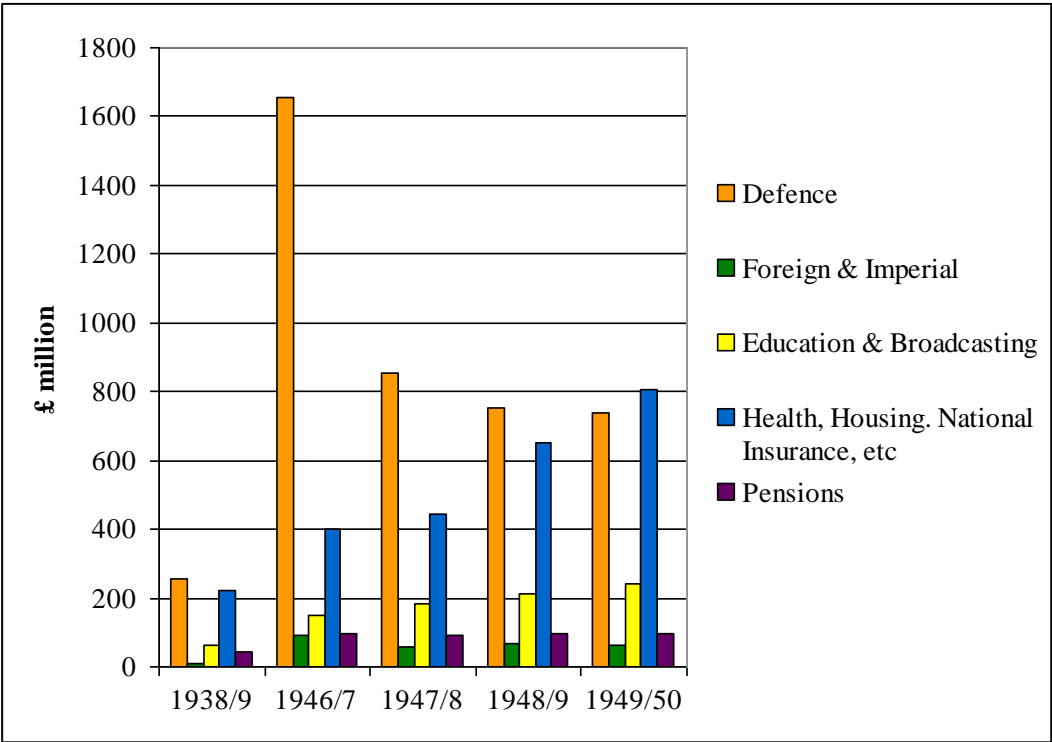


Table 2.4: Central Government Expenditure

¹⁶⁴ Bullock, pp. 158-159, 307-8, 315-316, 368-371, 399; Margaret Gowing, assisted by Lorna Arnold, *Independence and Deterrence: Britain and Atomic Energy 1945-1952: Volume 2 Policy Execution* (London: Macmillan, 1974) pp. 36-45; Hennessy, *Never Again*, pp. 90-91, 93, 230, 236; Hennessy, *Having it so Good*, pp. 140-143, 149; Hennessy, *Muddling Through*, pp. 101-102; Milward, *The Economic Effects of the Two World Wars on Britain* in its entirety; Stone, *The Atlantic and its Enemies*, Chap. 1.

¹⁶⁵ Central Statistical Office, *Annual Abstract of Statistics*, No. 88, Table 265; Geiger, p. 229; Milward, *The Reconstruction of Western Europe*, p. 41.

¹⁶⁶ Hennessy, *Having it so Good*, pp. 140-143; Hennessey, *Never Again*, pp. 268-269.

¹⁶⁷ Hennessy, *Never Again*, pp. 87.

Whilst Hennessy quoted Albert Halsey that Attlee 'ruled a poverty-stricken country exhausted by war', his own 'audit of British industry' in the summer of 1945 concluded: 'our industrial and financial platform [in 1945] represented a base not just for arresting decline or holding our own but for growth as a manufacturer and trader. It was the basis for large and sustained wealth creation. The key question was and remains how much of a load could that [industrial and financial] base carry'. Thus, what was the load and was it too great?¹⁶⁸

Domestically Britain needed urgently to renovate its infrastructure after its heavy wartime use; replace, renovate and extend its housing stock (some 500,000 houses had been destroyed and 250,000 severely damaged during the war); modernize those elements of its tired heavy and traditional industries which for a time had profitable life left; expand her existing successful high-tech industries, and civilianize her new electronics and computer industries.¹⁶⁹ Her population sought improved social conditions whose objectives were encapsulated in the 'semi-official' Beveridge Report.¹⁷⁰ Finally the left-wing of the Labour Government was committed to overly-rapid and too extensive nationalization.¹⁷¹ Private investment was adversely affected by uncertainty over future property rights; demand trends in what could be a command economy; the structure of international trade; possible political instability, and how to settle the national debt. This slowed recovery and complicated Government decision making.¹⁷²

In its aspirations to world power status, social improvement programmes and nationalization, the British Government chose policies and timeframes that overloaded its base. Geiger cited Sir Alexander Cairncross when examining Britain's conversion process from a war to a peace economy and the role of defence expenditures but the quotation serves well to cover the whole post war situation:

¹⁶⁸ Hennessy, *Never Again*, pp. 116-118.

¹⁶⁹ Geiger, pp. 218, 222; Hennessy, *Never Again*, pp. 93, 99-111, 113-118, 163-174, 197.

¹⁷⁰ Hennessy, *Muddling Through*, pp. 179-180; Hennessy, *Never Again*, pp. 73, 77, 88, 118; HMG, Sir William Beveridge, 'Social Insurance and Allied Services Report', Command 6404 (London: HMSO, November 1942) ; Milward, *War, Economy and Society*, pp. 340-341.

¹⁷¹ Hennessy, *Muddling Through*, pp. 172-173, 180-181; Hennessy, *Never Again*, pp. 79-80, 103, 184, 197-208, 277, 337-338.

¹⁷² Geiger, pp. 220-221.

'[t]he real problem for Britain was that the role she was asked to play was one beyond her strength'¹⁷³ whilst Stone wrote, citing Truman, '[the British have] decided to go bankrupt and if they do that it will end our prosperity and probably all the world's too'¹⁷⁴. In summary, Britain was bankrupt but the court had not yet issued the bankruptcy order and with careful management she could have avoided that happening. The right managers were missing and whilst Marshall Aid delayed final judgement, it became unavoidable in the 1970s.¹⁷⁵

Airlift Costs

Given the state of Britain just outlined, what was the cost of the Berlin Airlift? Twice during October 1949 the Government gave the figure to Parliament as £10.25 million.¹⁷⁶ The Foreign Office (German Section) Weekly Estimates of Expenditure contained a handwritten unsigned note dated 24 May 1949 which gave the estimated gross costs, excluding those of RAF personnel, as £8,879,000 for the period up until 31 March 1949, with weekly running costs at that point of £309,000 (making a figure of nearly £11,000,000 when the Blockade was lifted).¹⁷⁷ At the 9th Meeting of the British Gen.241 Committee it was recorded that the cost to the Exchequer was approaching £13 million per annum.¹⁷⁸ The RAF Museum Cold War Exhibition gave the Airlift costs as £17 million, US\$350 million and 150 million West German Deutschmarks.¹⁷⁹ Tunner gave the American official estimate as \$300m (which he considered was too high even allowing for it including the cost of running the special Airlift school at Great Falls and the reopening of depots in the USA and RAF Burtonwood).¹⁸⁰ The Department of Defense figure (cited by the US Navy) was an

¹⁷³ Geiger, p. 218.

¹⁷⁴ Stone, *The Atlantic and its Enemies*, pp. xvi-xvii, 41.

¹⁷⁵ Hennessy, *Never Again*, pp. 367-368; Milward, *The Reconstruction of Western Europe*, pp. 50-52.

¹⁷⁶ Hansard: 'Berlin Airlift (Cost)', HC Deb 19 October 1949, Vol. 468, c27w and 'Cost of the Airlift', HC Deb 24 October 1949 Vol. 468 c1008.

¹⁷⁷ TNA, FO 944/668, Note 24 May 1949.

¹⁷⁸ TNA, AIR 20/7148, extract of meeting 7 February 1949.

¹⁷⁹ RAF Museum, 'The Berlin Airlift - Facts & Figures' <www.nationalcoldwarexhibition.org/learn/berlin-airlift/berlin-airlift-fact-figures.cfm> [accessed 23 June 2011]. The period covered is undefined.

American cost of US\$265,448,000 for the period 26 June 1948 to 30 September 1949,¹⁸¹ whilst on the 13 May 1949 the Office of Public Information gave a figure of US\$190,108,100 made up of actual and estimated costs for the period 26 June 1948 through to 12 May 1949¹⁸². Both average out at approaching US\$600,000 per day.

The Air Ministry civil servant, T. C. G. James¹⁸³ gave the extra cost to the RAF of the Airlift over and above what it would have been expending otherwise as an average of £22,000 per week for the period between 28 June 1948 and the start of April 1949 - a total approaching £900,000. His figure comprised the additional miles flown, the increased aircraft depreciation, the greater spares consumed, the increased maintenance, and the larger vehicle running costs.¹⁸⁴ The Foreign Office recorded the total cost of the civilian chartered airlift (the 'Civil Lift') as £5,491,000, rising from £113,000 in August 1948 to £914,000 in June 1949.¹⁸⁵ In April 1949 the Treasury-set ceiling had been £185,000 per week. In the same month, James recorded the current RAF "additional" running costs were £24,000 per week.¹⁸⁶

Although James's figures included additional vehicle running costs, they gave a broad identification of the premium the Government were to pay by electing to augment the RAF's capability with contactors. The Foreign Office figures started in August 1948. By the end of March 1949 they totalled nearly £2.7 million. Over the same period, based on £22,000 per week, the RAF "additional" costs were £760,000. During those eight months the RAF hauled 209,579 short tons whilst the Civil Lift

¹⁸⁰ William H. Tunner, *Over the Hump* (Washington DC, US Government, 1985) pp. 222-223.

¹⁸¹ USNA, Record Group 428, 'General Records of the Department of the Navy 1947', 'Office of Information Subject Files 1940-1958' Box 11, 'The Berlin Blockade 26 June 1949 to 30 September 1949'.

¹⁸² AFHRA, IRISNUM 1038188, Summary of the Berlin Airlift 13 May 1949.

¹⁸³ Air Ministry S6. The July 1949 Air Force List showed James's grade as a Principal. James participated in 'The Berlin Air Lift 1948-1949', *Royal Air Force Historical Society Proceedings*, Issue No. 6, September 1989, pp. 67-68.

¹⁸⁴ TNA, AIR 2/10064, E248, James 9 April 1949.

¹⁸⁵ AM, AHB, German Supply Department, FO, 'Employment of Civil Aircraft' 22 December 1949 which was 'acquired' by Walmsley.

¹⁸⁶ TNA, AIR 2/10573, Meeting in Seal's room 6 April 1949.

figure was 64,066.5.¹⁸⁷ An RAF ton cost the Government an additional £3.60, a Civil Lift one £42.¹⁸⁸ However, the Civil Lift was improving and in May 1949 the cost had fallen to £31 per ton.¹⁸⁹

Tunner's remarks about Great Falls and RAF Burtonwood raise the issue of what figures were included and what not in this complex, multi-national, multiple department operation. For example, the BAFO Director of Works reported that the "air-side" element of the civil engineering upgrades in the British Zone were DM25 million (or £2.1 million).¹⁹⁰ The US Government figures introduce the question of the period covered. For example the British Airlift continued until 6 October 1949 whilst the Berlin Blockade was lifted on 12 May 1949.¹⁹¹ A further challenge when comparing American, British and western German figures is whether to apply the post-18 September 1949 conversion rate of US\$2.80 to the pound or the previous one of US\$4 to £1.¹⁹² It is not possible, moreover, to use American figures to deduce British costs (or vice versa) as the former were operating much further from their USA mainland depots whilst the latter provided more of the infrastructure but its aircraft were less cost-effective.¹⁹³ James's correspondence reveals a further point, whether the full costs or the additional ones should be used. Ideally, it should be the latter and in the specific case of this research, just those for the RAF and the Civil Lift.¹⁹⁴

¹⁸⁷ AP3257, p. 519.

¹⁸⁸ The RAF tonnage figure was gross weight whilst 50% of the Civil Lift was bulk liquid fuel carried by the Wet Lift and thus net weight. See thesis Chaps. 5 and 6 below. Additionally, James's figure did not allow for the costs incurred by the Government in providing alternative shipping arrangements for the cargo, mail and passengers that would normally have been transported by the RAF.

¹⁸⁹ AP3257, p. 519; AHB, German Supply Department, 'Employment of Civil Aircraft' 22 December 1949.

¹⁹⁰ AP3257, p. 261.

¹⁹¹ AP3257, App. S.

¹⁹² Kit Dawney, 'A history of sterling', *The Telegraph*, 8 October 2001; Hansard, 'Sterling Exchange Rate', HC Deb 27 September 1949, Vol. 468, cc7-144.

¹⁹³ AP3257, pp. 14-16, Part 7, Apps: C, D, E, G, K, R; Miller, *To Save a City* (Texas A&M) pp. 130-140.

¹⁹⁴ Specifically about the complexity of expenditure components: AP3257, pp. 355-359, 443-512, 526-527, 534-535, 546, 555-587; Chris Clark, Head of Office of Air Force History Footnote continues on next page.

In the absence of a full set of figures for the additional costs, the Parliamentary figure of £10.25m has been used in the remaining paragraphs of this section. Using the data underlying Tables 2.2 and 2.4, £10.25m equated to 0.04% of the 1949 National Debt and 1.37% of 1948/9 Government expenditure on health, housing, National Insurance and pensions. It was 60% of Hennessy's figure for atomic research during the same year.

The British Gen.241 Committee recorded in February 1949 both the financial reality of the situation and the undoubted thinking of the Country's leaders: '[the cost which was approaching £13m per annum] was considerable but it had to be set against the much heavier cost that might have been required if we had failed to retain our position in Berlin.'¹⁹⁵ As an example of 'heavier cost', when writing in the early 1990s Joseph Nye Jr set the 20 year cost of American involvement in South Vietnam at US\$600bn.¹⁹⁶

Finding somewhere to live in 1948 was a challenge. One of the victorious Conservative party's election slogans as late as 1951 was to build 300,000 houses to help with the housing shortage.¹⁹⁷ £10.25m would have bought a mere 7,800 prefabs

RAAF, *Operation Pelican: The Australian Air Force in the Berlin Airlift* (Tuggeranong: RAAF Air Power Development Centre, 2008) p. 73; Collier, p. 165, citing The [American] Air Force Blue Book Vol. II 1960; John Curtiss, 'The Berlin Airlift', part of 'The Proceedings of the RAFHS [Royal Air Force Historical Society] Seminar on the Evolution of Air Transport within the RAF', *The Journal of the RAF Historical Society*, No. 22 (Steventon: Professional Book Supplies, 2000) p. 64; Hansard: 'Royal Air Force (Equipment)', HC Deb 1 August 1951 Vol. 491, cc1469-501; 'Transport Aircraft (Contracts)', HC Deb 27 November 1950, Vol. 481, c792; 'Transport Aircraft', HC Deb 12 March 1953, Vol. 512, cc1575-681; HQ USAFE, *Berlin Airlift: A USAFE Summary, 26 June 1948-30 September 1949* (HQ Ramstein AFB: USAFE reproduction Centre, undated, circa 1950) pp. 172-174; Miller, *To Save a City* (Texas A&M) p. 177; MOD, AHB, *Britain and the Berlin Airlift* (London: HMSO, 1998) p. 17; USN, Centre for Cost Analysis, *OSCAM AIR v3.0 Data Guide and Historical Dataset Reference*, edn. 2.0 <www.oscamtools.com/oscampub/Docs/v3.0, January 2008>.

¹⁹⁵ TNA, AIR 20/7148, extract of Meeting 7 February 1949.

¹⁹⁶ Joseph S. Nye Jr, *Understanding International Conflicts: An Introduction to Theory and History* (New York: HarperCollins, 1993) p. 114.

¹⁹⁷ Nigel Charters, ed., '25 October 1951', *politics97* <www.bbc.co.uk/news/special/politics97/background/pastelec/ge51.shtml> [accessed 27 November 2012] (for slogan).

'Several main issues were highlighted during the campaign including the rising cost of living, housing and the expensive rearmament programme which has been ongoing since the war' - Anon, '1951: Churchill wins general election' <news.bbc.co.uk/onthisday/hi/dates/stories/october/26/newsid_3687000/3687425.stm> [accessed 25 June 2013].

but not the land nor paid the erection costs.¹⁹⁸ The H2S High Speed Rail project provides a modern topical comparison. The Press cites the Government's intention to invest £32.7bn in the project. £10.25m as an historic project opportunity cost would equate to £300m today or over 100 times less.¹⁹⁹

To conclude, Britain's finances were indeed in a poor state in 1948-1949. She had large external debts, much of which were in dollars that she had to earn. Her wealth creating ability had declined significantly. She had expenditure related to her inherited position as head of a large empire; to still perceiving herself to be a world power, including occupation responsibilities, and the social and nationalization programmes of her Labour Government. Unforeseen expenditure would have not been welcomed but the sums involved with the Airlift were not overwhelming. What is likely to be more significant was that impoverished Britain lacked the hardware assets necessary to play the major role she aspired to in the Berlin Airlift and this is explored in Chapters 5 and 6.

¹⁹⁸ Greg Stevenson, *Palaces for the People* (London: Batsford, 2003) pp. 100, 223.

¹⁹⁹ Anon, 'Measuring Worth' <www.measuringworth.com/ukcompare/> [calculated 12 January 2013]; Jorn Madslie, 'HS2 Cost and Benefit debate not over', *BBC Business News* dated 19 Jan 2013.

CHAPTER 3:

AIRLIFT PRECEDENTS

The Berlin Airlift did not happen in a vacuum. The people who ran it had in mind both their own past experiences and the lessons assimilated into their organization's consciousness from previous events. Therefore Chapter 3 seeks to delve into previous operations in order to help assess behaviours, decisions and responses in the Airlift. Chapter 3 investigates how earlier airlifts may have influenced the American and the British to initiate an airbridge in response to the Soviet Blockade and if Soviet wartime experiences explain why it may have reacted to the Berlin Airlift in the way it did. It examines the precedents to determine the guidance they contained for those commanding the Airlift. Third, in conjunction with Chapter 5, it determines how the appointments of senior officers during Operations VITTLES and PLAINFARE made best use of the air supply experience they had gained earlier.

Prior to the Berlin Airlift there had been airlifts of passengers and cargo when surface means was impossible owing to climatic, geological, or political events. The Second World War saw significant growth in air transport operations involving many different logistical models. For example, "air drops" of troops and materiel by parachute do not involve aircraft landing at consignee airfields whilst airbridges, like the Berlin Airlift, deliver materiel and passengers to airfields.¹

¹ Air transport commitments before and during World War II included airbridges; casualty evacuation; invasion by parachute and glider; regular even scheduled flights to widely dispersed bases; supply to advancing or retreating armies; Chindit-type mobile operations behind enemy lines; support to partisans, and humanitarian air drop operations.

Example sources: Camille Allaz, John Skilbeck, ed., in English George Grant, *History of Air Cargo and Airmail from the 18th Century* (London: Christopher Foyle in assoc. with the International Air Cargo Association, 2004) Part 4, Chap. 2; AM, AHB, AP3235: *The Second World War 1939-1945 Air Support* (1955) pp. 145, 172-178; AM, AHB, *The Campaigns in the Far East: Volume V: Air Supply Operations in Burma 1942-1945* (first draft original May 1949, reprint by MLRS Books) p. 8; Anon, *History of the Operations of 21 Army Group on the Continent of Europe 6 June 1944-8 May 1945* (Germany: 1945) <Movement Control Association, www.movcon.org.uk/History/Documents/DID/D-MCHS%200514.htm> [accessed 15 September 2011] (Chap. V, Phase IV, Section 9); Anon, 'Operations CHOWHOUND and MANNA', *Operation Manna Commemoration 2010* <operationmanna.secondworldwar.nl/> [accessed 12 February 2013]; MOD, AHB, *A Short History of the Royal Air Force* <www.raf.mod.uk/history/shorthistoryoftheroyalairforce.cfm> [accessed 14 September 2011] (pp. 157-173); MOD, *RAF Timeline 1918-*

Footnote continues on next page.

Three airbridges are explored in this chapter, the American India-China Airlift 1942-1945; the Anglo-American one at Imphal March to June 1944, and the Germans at Stalingrad November 1942 to February 1943. They are selected as they should have been in the recent institutional awareness of those involved in the Berlin Airlift. Stalingrad was chosen because Major General William Tunner, Commanding General Combined [Berlin] Airlift Task Force [CG CALTF], wrote in *Over the Hump* that the German failure there might have coloured the early Soviet response to the Berlin Airlift.² The wider Soviet experience during the Second World War is also explored for the same reason. A survey of western Berliners' opinions about the likely success of the Berlin Airlift was taken in July 1948 (Chapter 2 above). Two *Der Abend* essayists, who had wartime experience of air supply, were pessimistic, 'I gave up hope for Berlin' but how most individuals reached their views was not explained. Thus the impact of past air transport operations on the citizens cannot be evaluated.³

THE AMERICAN INDIA-CHINA AIRLIFT - 'THE HUMP'

The Japanese had taken control of Manchuria and the coast of China in 1931. Nationalist China had been more actively fighting Japan since 1937. America supported the Nationalists with materiel delivered along the Burma Road. Two thirds of the Japanese army was engaged in China in a complex war that at different times involved the Nationalists, the Chinese Communists, and the Soviet Union. When Burma fell to Japan in 1942, delivery could only continue by air but now with a mutual enemy it became imperative that the Nationalists continued to fight. Furthermore, the forward bases for the Boeing B-29 'very heavy bombers' attacking Japan and Manchuria were located in China during the second half of 1944 and these

1929: 23 Dec 1928 <www.raf.mod.uk/history/raftimeline/19181929.cfm> [accessed 14 September 2011]; Forrest C. Pogue, *US Army in World War II The European Theatre of Operations: The Supreme Command* (Washington DC: U.S. Government, 1954) pp. 457-458; Hilary St George Saunders, 'Volume III: The Fight is Won', *Royal Air Force 1939-1945* (London: HMSO, 1954) pp. 192-196, 235-236, 278-279, 292.

² William H. Tunner, *Over the Hump* (Washington DC, US Government, 1985) p. 184.

³ Walter Phillips Davison, *The Berlin Blockade: A Study in Cold War Politics* (New York: Arno Press, 1980) pp. 135-143 (p. 143 for quotation).

too had to be supplied by air.⁴ Tunner wrote that Roosevelt described the air route from India into China, 'The Hump', as 'an epic of the war'.⁵

The Hump was an example of gradual but spectacular improvement. It started with a few twin-engine aircraft, operating from insufficient and inadequate airfields, at the end of long tenuous lines of communication, backed up by a very poor maintenance organization. In July 1942 85 tons were delivered, in July 1945 71,042 tons (equivalent to nine days deliveries to Berlin in April 1949⁶). Approximately 690,000 tons were hauled over the Hump between July 1942 and November 1945 with over 60% of it being hauled between January and August 1945. Gasoline and oil accounted for 57% of the tonnage.⁷ There was a China to India lift but it was substantially smaller and by 1945 most aircraft returned westbound empty or in ballast.⁸ This section considers the India to China airlift only.

By May 1942 the Japanese had cut the surface supply routes to the non-communist Chinese and overtime the growing American forces in China. Air movement over the Himalayas was the only means available. The Japanese occupation of Burma meant that until late 1944 the consigning airfields had to be in eastern Assam and the route had to cross the High Himalayas to the Yunnan Province of China.⁹ Dinjan airfield in Assam was 500 miles from the ones at Kunming. It is 100 feet above sea level. The route from there to China quickly rose to 10,000 feet, followed by a series of 14,000-16,000-foot ridges before descending to 6,200 feet above sea level at

⁴ Wesley Frank Craven, and James Lea Cate, 'Forward', *The Army Air Forces in World War II, Volume V: The Pacific: Matterhorn to Nagasaki June 1944 to August 1945* (Chicago: University of Chicago Press, 1953) pp. XII-XV; Norman Stone, *World War Two: A Short History* (London: Allen Lane, 2013) pp. 11-12, 55, 76-77, 125, 160-161.

⁵ Tunner, p. x.

⁶ HQ BAFO, *AP3257 A Report on Operation PLAINFARE (The Berlin Airlift) 25th June 1948 - 6th October 1949* (Bielefeld: Control Commission, 1950) p. 519.

⁷ Frank H. Heck, 'Chapter 5 Airline to China', in *The Army Air Forces in World War II, Volume VII: Services Around the World: I. Air Transport*, ed. by Wesley Frank Craven and James Lea Cate (Chicago: University of Chicago Press, 1958) generally and pp. 146-147 specifically; HQ Army Air Forces, Office of Statistical Control, *Army Air Forces Statistical Digest World War II* (copy corrupt, presumed to be Washington DC: US Government, 1945) <www.afhra.af.mil/shared/media/document/AFD-090608-043.pdf> [variously accessed 2011] (Table 211).

⁸ Heck, pp. 146-147.

⁹ Heck, pp. 114-115; Tunner, p. 59.

Kunming. At these altitudes violent turbulence was common whilst flying at higher levels risked severe icing for several months of the year. Overcast conditions sometimes reached up to 30,000 feet (above the operating ceiling of most of the aircraft deployed) and thunderclouds could rise to 60,000 feet. The true monsoon started in mid-May with 200 inches of rain falling in the next five months.¹⁰

Almost all the materiel needed in China had to be imported into India and then transported '1,500 miles by primitive railways of varying gauges and limited capacity' and 'slow, ancient river barges' to the Assam airfields. Besides the lines of communication and the weather, the airlift suffered initially from a lack of aircraft and all-weather airfields, and from attacks by the Japanese on both the infrastructure and the aircraft.¹¹ Up until 1944 there were serious manpower deficiencies. Reinforcements were generally late. Both aircrew and maintenance staff arrived inadequately trained and experienced. Pilots, for example, required additional local training. Serious illnesses posed a constant challenge and the high work rates meant extreme fatigue needed to be watched for. At times morale was low for similar reasons to those in the British Fourteenth Army, the 'Forgotten Army', also based in Eastern India and Burma.¹²

At the start the chain of command was confused and responsibility was placed on commanders with other pressing commitments and interests; no experience operating transport aircraft, and in some cases a lack of confidence in the airlift concept.¹³ In October 1942 Air Transport Command offered to undertake the task providing it had full control of the operation under the direct supervision of General Henry Arnold,

¹⁰ Heck, pp. 114-117; Wolfgang J. Hushke, *The Candy Bombers: The Berlin Airlift 1948/49: A History of the People and Planes* (Berlin: Metropol, 1999) [Translation of *Die Rosinenbomber*] p. 59; Tunner, pp. 59, 73-75, 87.

¹¹ Heck, pp. 116-117 (for quotations), 119; Tunner, pp. 75-79; William J. Slim, *Defeat into Victory* (London: Pan, 1999) pp. 169-173 (as a Lt Gen, Slim commanded the Fourteenth Army).

Julian Thompson, *Lifblood of War: Logistics on Armed Conflict* (London: Brassey's, 1998 [reprint of 1991 edn.]) pp. 79-86 also provided a summary of the terrain and communications in eastern India and Burma.

¹² Heck, pp. 119, 127; Tunner, pp. 57, 61, 84-86, 89-90, 92, 101, 106-107; Slim, p. 181 (for quotation).

¹³ Heck, pp. 117, 119-120.

CG USAAF.¹⁴ On 1 December 1942, Brigadier General Edward Alexander became the commanding officer of the new [US] Air Transport Command [ATC] India-China Wing. In September 1944 after several changes in commander Brigadier General William Tunner took charge of what had become the India-China Division. (ATC Wings were raised to Division status on 1 July 1944.) He remained in post until November 1945.¹⁵

The airlift competed with the RAF and other units of the USAAF for the few all-weather airfields. More were built but until late in 1943 these were completed far behind schedule.¹⁶ In August 1944 Luliang was opened which with Chanyi gave two all-weather alternates to Kunming airfield in China.¹⁷ In addition the 'long-haul' deliveries directly to XX Bomber Command airfields in the Chengtu area further reduced the pressure on Kunming. Although most freight was dispatched from the Assam airfields, in November 1944 operations began with Douglas C-54s (a four-engine military version of a civil passenger liner) and Consolidated C-109s (tankers based on the four-engine Liberator bomber) from East Bengal.¹⁸ By July 1945 there were 13 airfields including four C-54 bases as well as six airfields on the China side around Kunming.¹⁹

On 16 December 1942 43 Douglas C-47/C-53s were available in the theatre to fly a service between Karachi and Assam; the Hump airlift, and meet other emergencies.²⁰ By the second week of March 1943, the Wing had 11 Consolidated C-87s and 76 Douglas DC-3 type aircraft (a mixture of military models such as the C-47 and civilian aircraft).²¹ The assigned strength rose to 640 aircraft in July 1945²² with the

¹⁴ Lt Gen 15 December 1941, Gen 19 March 1943.

¹⁵ Heck, pp. 117, 119-120; USAF, 'Lieutenant General William H. Tunner', *Biographies* <www.af.mil/information/bios/bio.asp?bioID=7431> [accessed 16 December 2012] gave October 1945 for the handover.

¹⁶ Heck, pp. 115, 117-118, 122-123, 125-128.

¹⁷ Heck, pp. 134, 138-139.

¹⁸ Heck, pp. 134, 138-139.

¹⁹ Heck, p. 141.

²⁰ Heck, p. 119.

²¹ Heck, p. 121. The C-87 was a transport version of the Liberator bomber.

²² HQ Army Air Forces, *Army Air Forces Statistical Digest World War II*, Table 211.

'average number in commission for Hump service' at 332.²³

Curtiss C-46s progressively replaced the smaller DC-3 aircraft but inevitably actual deliveries were behind schedule. The C-46 was new to service and had many faults that required extensive modifications; a process that reduced aircraft availability markedly.²⁴ One problem, however, could not be modified out; the C-46 had only two engines and was an enormous aircraft at the time for that configuration. (Its wingspan was larger than the 4-engine Boeing B-17 bomber.) It was, thus, difficult to keep airborne when fully laden if an engine failed. Attrition rates for the C-87 and the C-46 aircraft were very high throughout the airlift. 593 cargo aircraft were lost on the Hump route between 1 September 1942 and 30 September 1945 including 281 C-46s and 72 C-87s.²⁵ The accident rates meant there was continual pressure to improve flight safety.²⁶ The C-54's operating ceiling was too low for the northern route to China. The Allied victories in Burma in 1944-1945 allowed a southern lower altitude route to be introduced where it could be deployed. At seven tons (and more later) its payload was 70% more than the C-46 and its accident rate was almost 500% less than the C-87 and C-109.²⁷

In December 1942 the USAAF delivered 1,227 tons. In January 1943 the Wing's establishment was to be built up to permit 4,000 short tons a month to be airlifted into China. In the event the shortage of aircrews which led to under-utilization of serviceable aircraft; the continued shortage of all-weather airfields in Assam owing to 'the failure to complete the airdromes at Sookerating and Mohanbari', and flooding at Kunming in July meant that the 4,000 ton objective was not met until August 1943.²⁸

By mid July 1943 more aircraft, manpower, equipment, and spares were en-route

²³ Heck, p. 141.

²⁴ Heck, pp. 123-124.

²⁵ Huschke, pp. 58, 292-293, 295; Tunner, pp. 62, 70.

²⁶ Tunner, pp. 79-84, 97-103, 114.

²⁷ Heck, pp. 141-144; Huschke, p. 72; Tunner, pp. 71 and 128 (superiority of C-54 over C-46 aside from its ceiling and Tunner's desire to replace the C-46 by C-54), 165 (Tunner's pleasure that there were no C-46s on the Berlin Airlift).

²⁸ Heck, pp. 117, 119, 121-123, 127; Tunner, p. 61.

from the USA by air and sea. However, none of the pilot reinforcements were competent to fly the C-46 and a conversion unit had to be set up which diverted sixteen experienced pilots and ten C-46 aircraft from the Hump. Maintenance personnel were few, inexperienced and had to work mainly at night owing to the high daytime temperatures; spares were extremely scarce, and third and fourth-echelon maintenance and repairs could not keep up with demand. At one point 26 C-46s were out of commission. Nevertheless, in July 1943 the monthly target was set at 7,000 tons; it was achieved in October 1943.²⁹

The target for September 1943 was set at 10,000 tons. In October and November night flying was introduced although radio communication, radio navigational facilities and airfield lighting were poor. From September 1943 spares were flown in from the USA on a weekly schedule by C-87 and were also carried by aircraft being delivered to the airlift. In December 1943, with the arrival of large numbers of C-87s and modified C-46s from the United States together with spares to support them, 12,590 tons were delivered to China.³⁰ The Wing's strength in January 1944 was 180 transport aircraft which rose to 318 in December 1944 when the number of four-engine aircraft had grown five fold. The manpower position improved and airfield construction was at last adequate. In the second half of 1944 156,530 tons were delivered to China.³¹

This growth in tonnage was even more impressive because during the spring and summer of 1944 tactical support had to be given to the ground forces defending Imphal (and thus the Assam-Bengal railway which was essential to the Assam bases)³² and General Joseph Stilwell's offensive (which helped free the Myitkyina area and allowed all-weather airfields to be built there). Stilwell's campaign permitted aircraft flying from Assam to use a more southerly route at a lower altitude over the Himalayas and offered a potential of direct flights between airfields around Calcutta and China. In November 1944 a Japanese ground attack appeared to put

²⁹ Heck, pp. 121, 123-128; Tunner, p. 62.

³⁰ Heck, pp. 125, 128-129.

³¹ Heck, pp. 133-134; HQ Army Air Forces, *Army Air Forces Statistical Digest World War II*, Table 211.

³² See Imphal and Beyond section below.

Kunming at risk which resulted in a need for maximum effort delivering cargoes and Chinese troops to meet the threat.³³

Under constant pressure to raise the tonnage carried, increased efficiency and fuller exploitation of the existing facilities became an imperative. The emphasis on very high aircraft utilization (Tunner: 'constant utilization of equipment'³⁴) led to production line maintenance on the Assam airfields. It became normal practice to base only one type of aircraft per airfield. Another development was the employment of 47,009 civilians, mainly to load and unload aircraft. In January 1945, after the allied victories in Burma allowed cargo to be flown from Bengal to China and the Assam based planes to use a more southern lower altitude route, the eastbound tonnage rose to 44,098. These developments also meant that the C-54 aircraft could be used with the first direct C-54 flight from Barrackpore (near Calcutta) to Kunming occurring on 1 January 1945.³⁵

The real difficulty lay in finding enough C-54s.³⁶ As an expedient, following the recapture of Rangoon, several USAAF bomber, cargo and troop-carrying tactical units (with associated airfields) were committed to the airlift and placed under the operational control of the India-China Division. These attached tactical units carried 6,488 tons in June 1945, nearly 20,000 tons in July and 11,000 tons in August.³⁷ The airlift continued to supply the American forces in China until seagoing vessels could unload at Chinese ports. Tonnages fell rapidly with peace, 39,775 tons in September; 8,646 tons in October and 1,429 tons in November.³⁸ Table 3.1 below shows the growth in tonnage and India to China sorties whilst Table 3.2 covers tonnage and number of aircraft.³⁹ The Americans recorded passengers by weight and

³³ AHB, *Air Supply Operations in Burma*, pp. 26-27; Heck, pp. 134-136; Tunner, pp. 125-128.

³⁴ Tunner, p. 118.

³⁵ Heck, pp. 141-142, 144; Tunner, pp. 94-97.

³⁶ Heck, pp. 143-145.

³⁷ Heck, pp. 145-146.

³⁸ Heck, p. 150.

³⁹ HQ Army Air Forces, *Army Air Forces Statistical Digest World War II*, Table 211. There are very minor differences between the tonnages cited by Heck and those in the *Army Air Forces Statistical Digest World War II*, Table 211.

this is included in the tonnage.⁴⁰ Prior to November 1943 the tonnage included the fuel required for return flights which between March and July 1943 had varied between 383 and 651 tons a month.⁴¹

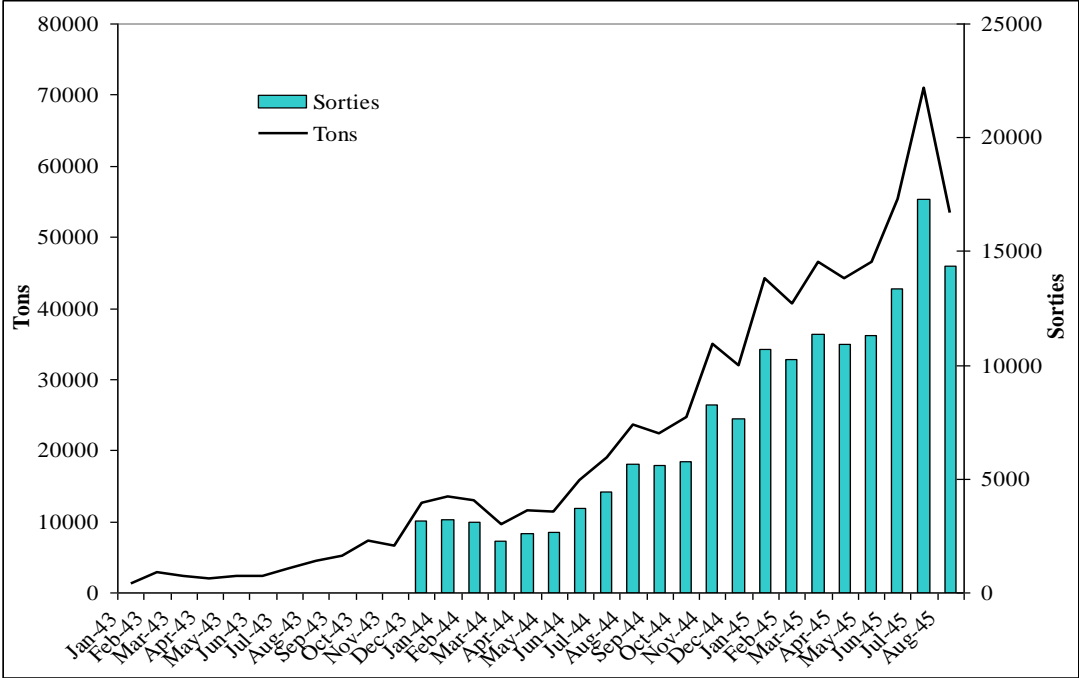


Table 3.1: India to China Airlift: Growth in Tonnage and Outbound Sorties

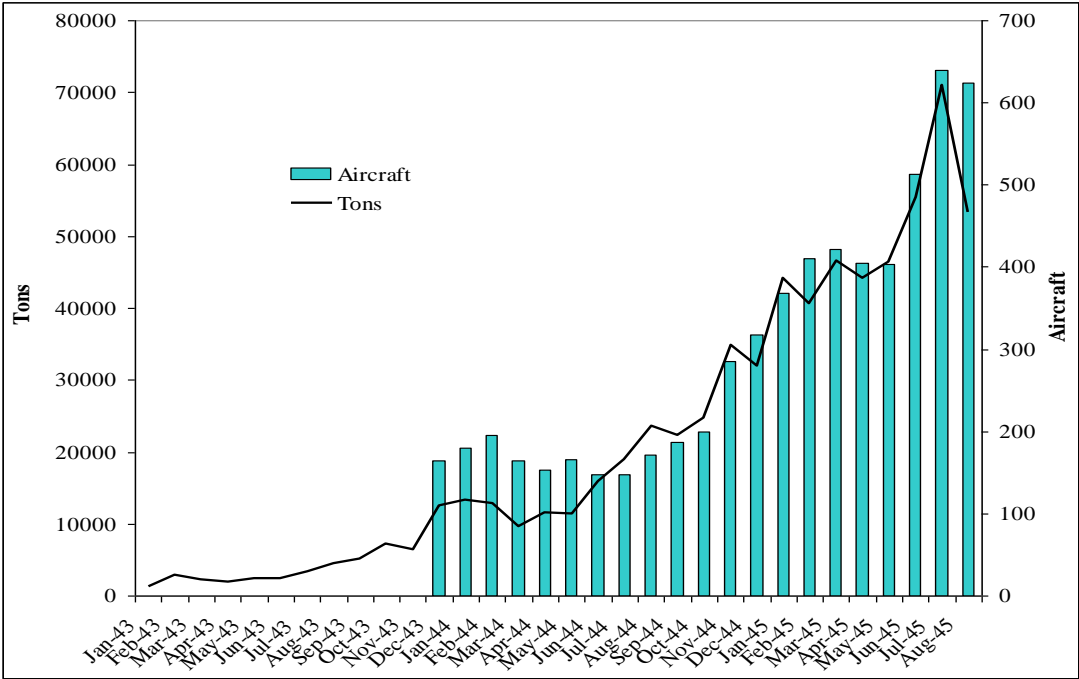


Table 3.2: India to China Airlift: Growth in Aircraft and Tonnage

⁴⁰ Heck, pp. 136, 146.

⁴¹ Heck, p. 123.

Tunner initiated competition between units with the results published in a daily bulletin, a motivator that would reappear during the Berlin Airlift. Fair targets had to be set and unlike the Berlin Airlift these had to be handicapped to allow for the various aircraft types operated and the different distances between the eventual thirteen airfields in India and the six airfields in China. The daily bulletin grew into a newspaper, the precursor of the CALTF *Task Force Times*.⁴²

The 478 mile long Ledo Road was intended to be the primary supply route to China. Work started in December 1942 and the first convoy reached Kunming on 4 February 1945. In the subsequent six months 129,000 tons of supplies were carried from India to China which was less than 43% of the tonnage airlifted in the same period. (The 26,000 trucks were handed over to the Chinese).⁴³ As Lieutenant General Sir William Slim wrote, 'If the road was to be really effective, its feeder railway should start from Rangoon, not Calcutta'.⁴⁴

'The strategic importance of this accomplishment [India China airlift] may be open to debate, but in terms of the development of air-transport concepts and techniques the airlift to China was of first importance'.⁴⁵ The Hump was a proving ground that 'made it possible to conceive the Berlin airlift of 1948–49 and [for the Americans] to operate it successfully'.⁴⁶ For example it emphasized the need to operate the minimum number of different robust efficient aircraft types, and the C-54 particularly, with the necessary ratio of thoroughly trained, highly motivated crews per aircraft to achieve full utilization operating from all-weather airfields. It also confirmed that quality maintenance was imperative and whilst the Americans would show considerable initiative in this area during the Airlift, it was only as the Blockade was ending that they had a fully effective capability. Where the

⁴² Tunner, p. 110.

⁴³ Dean Nelson, 'China plans to rebuild Burma's World War Two Stilwell Road', *The Telegraph* dated 6 January 2011; HQ Army Air Forces, *Army Air Forces Statistical Digest World War II*, Table 211.

⁴⁴ Slim, p. 249.

⁴⁵ Wesley Frank Craven, and James Lea Cate, 'Forward', *Army Air Forces in World War II, Volume VII: Services round the World*, (Chicago: University of Chicago Press, 1958) p. xii.

⁴⁶ Heck, pp. 150-151. Hump achievements précised in TNA, AIR 8/2607, Commonwealth Relations Office telegraph to High Commissioners 22 July 1948.

Americans, unlike the British, were to triumph was in appointing their most experienced and successful commander, Tunner, as its Airlift Task Force commander and allowing him to reconstitute his management team from his Hump subordinates, thereby allowing the expertise gained in South East Asia to be transferred to Germany.⁴⁷

After the Second World War, the USAAF sought full independence from the Army. Its strong cards were its proven conventional heavy bomber capability and that it provided the sole means of delivering the atomic bomb. Military air transport needed to keep a low profile in this debate as there was a lobby to replace it by civilian carriers.⁴⁸ Owing to the number, size, and importance of the USAAF wartime bomber forces and the publicity given to them, it was not surprising that senior Air Force posts were filled by those with that background. No doubt it could be suggested that this reflected an air force hierarchy - "pecking order" - typified by a statement ascribed to the Chief of Staff of the USAF between 1990 and 1994, Gen Merrill A. McPeak: 'The service's purpose is to generate combat capability that protects the country, and not necessarily to provide equal career opportunities for those who fly heavies [transports], or, heaven forbid, don't wear wings at all.'⁴⁹ Tunner too considered there was a negative attitude in the USAAF and USAF to officers who specialized in air transport, and that Cannon, CG USAFE, suffered from this.⁵⁰

However, in the 1940s, unlike 2008 when Lenderman was writing, it would have been difficult to substantiate that pecking orders prevented transport commanders reaching the highest appointments. Transport forces were either components of larger commands or when independent were much smaller than the bomber fiefdoms. It was the environments into which the transport forces were deployed, not the underlying culture of the USAAF and the USAF, that produced the inefficient

⁴⁷ See thesis Chaps. 5 and 6.

⁴⁸ Philip Meilinger, *Hoyt S. Vandenberg*, Air Force History and Museums Program (Bloomington IN: Indiana University Press, 2000) pp. 60-66, 78-84. See thesis Chaps. 5-7.

⁴⁹ Laura L. Lenderman, Lt Col, 'The Rise of Air Mobility and Its Generals', *Drew Paper No. 1* (Air Force Research Institute, Air University Maxwell AFB, 2008) p. 68.

⁵⁰ Tunner, pp. 190-191.

command structures identified in the Hump section above, the Imphal one below, and the subsequent Berlin Airlift chapters.

IMPHAL AND BEYOND

The successful defence of Imphal in 1944 turned a Japanese advance and led subsequently to the recapture of Rangoon in 1945. Headquarters Air Command South East Asia [HQ ACSEA]'s report, 'The Siege of Imphal' gave an airpower overview of the siege. It showed how small the airlift capability was initially, a few borrowed C-46s and eight squadrons of C-47s (the RAF name being Dakota) provided equally by the USAAF and the RAF. It recorded the impact of the weather, the state of the airfields, the difficulty obtaining and retaining reinforcements, and the need for the limited transport fleet to meet many tasks of varying priority, some without prior warning, spread across the Indo-Burma theatre, and not just at Imphal and Kohima. Issues at the frontiers between the air forces and the army were acknowledged and discussed in a mature way. It was an excellent introduction but as air supply was only one component and because it lacks detailed statistics, the report is seldom cited in this section.⁵¹ Lieutenant General George Stratmeyer's 'Despatch on Air Operations in Eastern Air Command covering the period 15 December 1943 to 1 June 1945' provided the American-orientated introduction. It too was wide ranging covering his period as Air Commander and his Anglo-American operational responsibilities for the Photographic Reconnaissance Force, the Strategic Air Force, the 3rd Tactical Air Force, and the Troop Carrier Command.⁵² The latter provided the air transport capability.⁵³

In his 'Lessons Derived' chapters, Generalmajor D. "Fritz" Morzik⁵⁴ argued that

⁵¹ TNA, AIR 23/1956, [Narrative about the] Siege of Imphal March-June 1944 (January 1945).

⁵² TNA: AIR 23/1927, Despatch on air operations Eastern Air Command, 15 December 1943 - 31 May 1944; AIR 23/1933, Despatch on air operations of Eastern Air Command 15 December 1943 - 1 June 1945.

⁵³ TNA, WO 203/100, Organizational Chart EAC showing its relationship to SEAC, ACSEA and USF IBT ['United States Forces India-Burma Theater'] dated 10 February 1945.

⁵⁴ Luftwaffe 'Flight Transport Leader of the Quartermaster General' - General der Transportflieger. Described as 'an air transport expert' by Herman Plocher, H. R. Fletcher, ed., *The German Air Force Versus Russia 1942*, USAF Historical Study 154 (Maxwell AFB, Air University, 1966) p. 348.

surrounded units should not form 'festungs' and expect to be supplied by air except as a last, temporary resort and there was a 'danger of too easy recourse to the employment of air support as a stop gap solution' for encircled troops.⁵⁵ In India and Burma the philosophy was entirely different in 1944: dig-in; be resupplied by air, and wait until you could fight your way out, or were relieved, or a combination of both.⁵⁶ However, as Field Marshal Slim wrote, air supply was only part of the equation:

Among the most strategically dangerous ideas that half-baked thinking on air supply provoked, was that even if surrounded, positions could be held for months provided that they might be maintained from the air. In fact, troops thus cut off, even if fed and maintained, eventually lost heart and air supply is so easily interrupted; the weather or a few well sited anti-aircraft weapons can easily put a stop to it. Air supply is only half the answer. The other half is an adequate relieving force which, however good the prospect of air supply, must appear in a reasonable time and which the beleaguered garrison must know will appear.⁵⁷

The British not only held out but at Imphal, after the reopening of ground communications, both the Imphal garrison (IV Corps) and the relieving force (XXXIII Corps) went over to the offensive and defeated the Japanese.⁵⁸ In Berlin, as Chapters 4-6 show, the Americans and the British had no end-game plan other than to continue, for years if necessary, until the Soviets gave up or agreed to a negotiated solution.

'Fought between 7 March and 18 July 1944, the Battles of Imphal and Kohima were the turning point of one of the most gruelling campaigns of the Second World War (1939-45)'.⁵⁹ The encirclement at Imphal lasted from approximately 30 March to 22

⁵⁵ D. F. Morzik, Edwin P. Kennedy jr., ed., *GAF Airlift Operations*, USAF Historical Study 167 (Maxwell AFB, Air University, 1961) Chap. 6, Sections I-IV, X and p. 179.

⁵⁶ AHB, *Air Supply Operations in Burma*, pp. 13-14; Slim, Chaps: XI-XV, XXIII, pp. 543-546.

⁵⁷ Slim, p. 546.

⁵⁸ AHB, *Air Supply Operations in Burma*, pp. 24-25; Saunders, *The Fight Is Won*, pp. 339-341.

⁵⁹ National Army Museum, 'Imphal and Kohima', *Britain's Greatest Battles*, <www.nam.ac.uk/exhibitions/online-exhibitions/britains-greatest-battles/imphal-kohima> [accessed 3 July 2013].

June 1944.⁶⁰ The airlift was undertaken simultaneously with the Hump⁶¹, and involved air supply concurrently to units falling back before the Japanese⁶², to encircled locations (the one at Kohima, for example, was 80 miles from Imphal)⁶³ and to troops operating in the Japanese rear⁶⁴. The defended area at Imphal totalled 800 square miles and included two all-weather and a number of fair-weather airfields.⁶⁵ The Imphal airbridge provided resupply, air movement of reinforcements, and evacuation of non-combatants, sick and wounded.⁶⁶ Aircraft were supplied from USAAF and RAF sources, mainly Curtis C-46s and Douglas C-47s, but also twin-engine bombers.⁶⁷ Transport aircraft were diverted from other tasks, including the Hump and the Mediterranean theatre.⁶⁸ Imphal was similar to the Berlin Airlift in that the Americans were the major supplier of aircraft and the British of the ground infrastructure.

The Air Ministry Air Historical Branch [AHB] gave the size of the force supplied by

⁶⁰ AHB, *Air Supply Operations in Burma*, pp. 21; Lee Bowen, 'Chapter 15 The Allied Offensive in Burma', in *The Army Air Forces in World War II, Volume IV: The Pacific: Guadalcanal to Saipan August 1942 to July 1944: 4. China-Burma-India*, ed. by Wesley Frank Craven and James Lea Cate (Chicago: University of Chicago Press, 1950) pp. 507-510; Commonwealth War Graves Commission, 'The Siege of Imphal', *Forever India*, <www.cwgc.org/foreverindia/stories/imphal-and-kohima.php> [accessed 4 July 2013]; Saunders, *The Fight Is Won*, pp. 323-332; Slim, pp. 300-301; TNA: AIR 23/1956, p. 27; CAB 44/215, p. 77.

⁶¹ AHB, *Air Supply Operations in Burma*, p. 22.

⁶² T. M. Kane, *Military Logistics and Strategic Performance* (London: Cass, 2001) p. 28 by airdrop to 17th Division; Slim, p. 300.

⁶³ AHB, *Air Supply Operations in Burma*, pp. 21, 23; MOD, *Second World War 60th Anniversary: The Battle of Kohima, North East India 4 April – 22 June 1944* (The Central Office of Information: 2004) <www.mod.uk/NR/rdonlyres/4C2B25FC-2E6C-45F9-B785-8A75139E9A0A/0/ww2_kohima.pdf> [accessed 21 April 2011] (Front page and p. 9).

⁶⁴ AHB, *Air Supply Operations in Burma*, pp. 15-21; Saunders, *The Fight Is Won*, pp. 332-339.

⁶⁵ Slim, pp. 286, 293; TNA, AIR 23/1956, p. 18.

⁶⁶ Bowen, p. 509.

⁶⁷ AHB, *Air Supply Operations in Burma*, pp. 12, 24; TNA, AIR 23/1956, p. 35.

⁶⁸ AHB, *Air Supply Operations in Burma*, pp. 22, 23; Charles F. Romanus and Riley Sunderland, Center of Military History US Army, *Stilwell's Command Problems, United States Army in World War II, China-Burma-India Theater* (Washington DC: Department of the Army, Office of the Chief of Military History, 1956) pp. 98-100; TNA, AIR 23/1956, p. 34.

air at Imphal as 120,000 but did not indicate when during the siege this applied.⁶⁹ The New Zealand Official History stated that 150,000 men were 'now surrounded'.⁷⁰ Kane stated Imphal was surrounded on the 29 March encircling over 155,000 troops and 11,000 animals.⁷¹ Airbridge statistics are problematic as it is not always clear whether figures were specific to Imphal or covered the total defence against the Japanese attack, including the siege and relief of Kohima. This is not surprising, for example one division reinforced both IV Corps at Imphal and XXXIII at Dimapur and Manipur (which were outside the besieged area)⁷² whilst the AHB quoted a Dakota pilot:

All our jobs are mixed up. One day we take in reinforcements to Imphal, the next day go to Comilla and collect flour, ammunition and petrol from the dumps for delivery to Imphal, where we pick up a load of "useless mouths" and return them to the Brahmaputra. Then we take casualties from the Kohima battle and the next day we are back again at the old supply-dropping job in the Kaladan.⁷³

Bad weather led to hours, even days without flying in April and May 1944. The south-western monsoon had started early bringing both storms and torrential rain which affected flying; caused congestion at the all-weather airfields, and reduced deliveries as materials to improve the fair-weather airfields had to be airlifted instead. In mid-June the weather became relatively benign and during the remainder of 1944-1945 it was not as bad as anticipated allowing flying and ground operations to continue.⁷⁴

⁶⁹ AHB, *Air Supply Operations in Burma*, pp. 24-25.

⁷⁰ H. L. Thompson, Wing Commander, *The Official History of New Zealand in the Second World War 1939-1945: New Zealanders with the Royal Air Force Volume III* (Wellington: Victoria University of Wellington, 1959) p. 333.

⁷¹ Kane, p. 29: 1,300 tons of animal food were delivered during the siege.

⁷² 5th Indian Division, 50 Indian Parachute Brigade and elements of the 2nd [British] Division were all airlifted. 2nd Division and one brigade of 5th Division reinforced XXXIII Corps with the rest of 5th Division airlifted to join IV Corps. 7th Indian Division reinforced XXXIII Corps - AHB, *Air Supply Operations in Burma*, pp. 22-23; Slim, pp. 299-300, 306, 309, 313-314, 320. AHB identified 50th Parachute Brigade incorrectly as 57th; Slim's special order of the day 31 August 1944 <www.paradata.org.uk> [accessed 19 April 2011].

⁷³ AHB, *Air Supply Operations in Burma*, p. 24.

⁷⁴ AHB, *Air Supply Operations in Burma*, pp. 8-9 describing monsoon conditions in 1943, 25, 27, 51; Metrological Office <www.metoffice.gov.uk/weather/asia/india_past.html> Footnote continues on next page.

Bowen acknowledged his statistics were approximate. Moreover, they covered between 18 April and 30 June 1944 and were specific to 'flown for the 4 Corps'. They are cited in Table 3.3 as an indication of the task of maintaining in combat within the encirclement at Imphal four divisions; elements of an armoured brigade; varying numbers of No. 221 Group fighter and fighter-bomber squadrons, and six airfields.⁷⁵

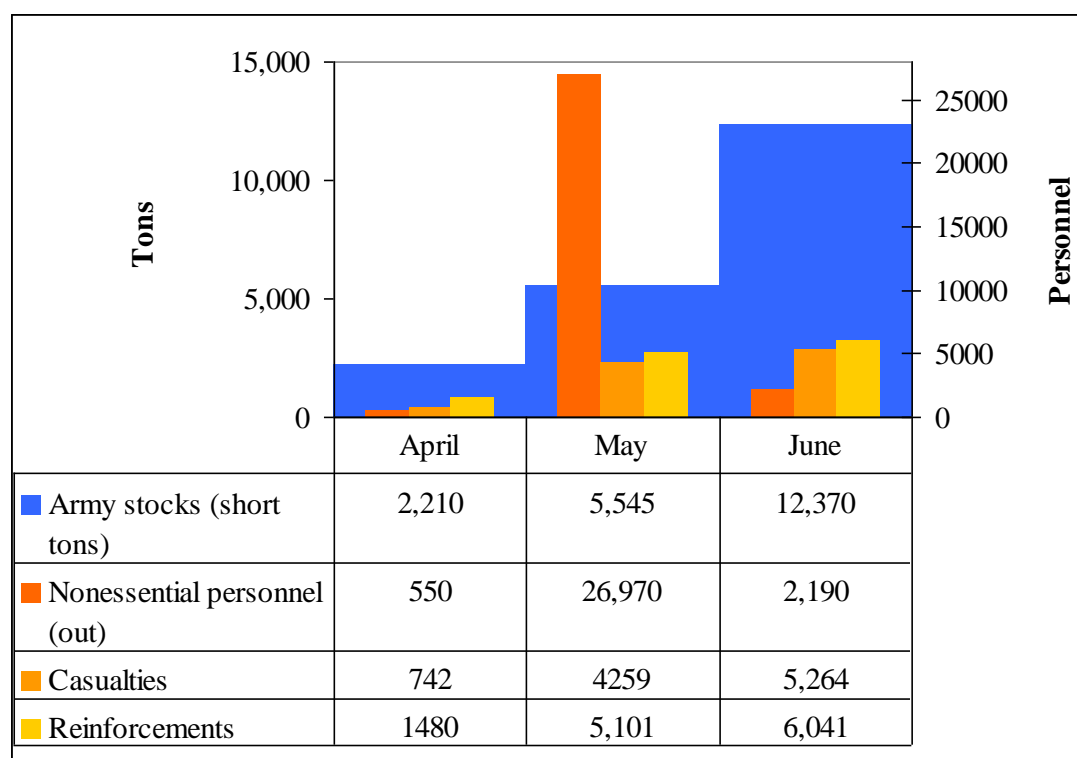


Table 3.3: Bowen Statistics: IV Corps 18 April to 30 June 1944

The daily requirement was an 'elastic' 540 long tons⁷⁶ but the daily average achieved overall was only 275 tons and despite the evacuation of non-essential personnel and relocation of some No. 221 Group squadrons to airfields beyond the encirclement,

[accessed 19 April 2011]; Saunders, *The Fight is Won*, pp. 339-341; H. L. Thompson, pp. 333-334; TNA, AIR 23/1956, pp. 30, 35, 43, 46.

⁷⁵ AHB, *Air Supply Operations in Burma*, p. 25; Bowen, p. 509; Saunders, *The Fight is Won*, pp. 329-330; H. L. Thompson, p. 334.

TNA, CAB 44/215, M. Henry, 'Siege of Imphal: War History' [1955(?)], pp. 75-76 recorded a 'fly-in' between 19 March and 15 April 1944 of five brigades and 'miscellaneous' other troops.

⁷⁶ AHB, *Air Supply Operations in Burma*, p. 23; H. L. Thompson, p. 333 cited 400 tons per day but gave no source.

rations had to be reduced and stocks fell sharply⁷⁷. During May 1944 'a very serious backlog was developing' but by June over 400 tons a day was achieved.⁷⁸ The AHB cited 604 tons a day were delivered between 18 and 30 June 1944⁷⁹ although much of that was after the Siege was ended on 22 June 1944 and road convoys started arriving on the 23rd.⁸⁰ Imphal had survived but overall air supply had not delivered the tonnage sought. The causes included those found at Stalingrad: lack of aircraft, the weather, the infrastructure including the supply lines to the rear, and the inexperience of the air forces and the army. As Kane argued, the Japanese lacked the airpower and anti-aircraft weapons to interrupt the airlift and were unable to capture the airfields.⁸¹ At Stalingrad the Soviets achieved both. Crucially, Slim had a successful end-game.

Prior to Imphal cargo aircraft in India had been perceived as a supplement to the Army's poor lines of ground communication. At Imphal, aircraft suddenly had to supply a complete Corps and a number of RAF squadrons.⁸² It was the start of a sharp learning curve that continued thereafter when air supply was delivered by air drop, air landing and glider in support of the Fourteenth Army's advance to Rangoon.⁸³ Table 3.4 shows the size of the Anglo-American airlift⁸⁴ from the crossing of the Chindwin River in October 1944⁸⁵; through the capture of Rangoon in May 1945⁸⁶; the redeployment of the USAAF Cargo Combat Groups in June⁸⁷, and

⁷⁷ Saunders, *The Fight is Won*, pp. 329-330; TNA, AIR 23/1956, p. 31.

⁷⁸ AHB, *Air Supply Operations in Burma*, p. 25; Saunders, *The Fight is Won*, p. 329.

⁷⁹ AHB, *Air Supply Operations in Burma*, p. 25; Saunders *The Fight is Won*, p. 329.

⁸⁰ TNA, AIR 23/1956, pp. 35-36, 65-66.

⁸¹ Kane, p. 32.

⁸² AHB, *Air Supply Operations in Burma*, pp. 3-4, 43-44.

⁸³ AHB, *Air Supply Operations in Burma*, Chap. 3; Slim, p. 507.

⁸⁴ AHB, *Air Supply Operations in Burma*, p. 38; Liddell Hart Centre for Military Archives, King's College London, Waite Papers, 'School of Land/Air Warfare, RAF Old Sarum, No. 9 Special Study Period Air Transport Forces and Supply by Air, July 1950, Appendix B, Supply By Air Effort, Summary of Operations in Burma Oct 44 to July 45'; Slim, pp. 386, 444.

⁸⁵ Slim, p. 387.

⁸⁶ Slim, p. 507.

'the Battle of the Break-out' in July 1945⁸⁸. The June 1945 tonnage of 25,954 also reflected the deteriorating weather; squadron redeployments, and RAF and Army shortcomings.⁸⁹ In April 1949, the last full month of the Berlin Blockade, the RAF delivered 13% more, 29,311 short tons.⁹⁰

Total hours flown	448,027
Average daily hours operating per serviceable aircraft	6.9
Total short tonnage delivered	379,976 ⁹¹
Number of reinforcements delivered	371,507
Number of casualties evacuated	103,700
Total USAAF/RAF/RCAF short tonnage in April 1945	76,709 (2,557 per day)
Total RAF/RCAF short tonnage in June 1945	25,954 (865 per day)

Table 3.4: Operations in Burma October 1944 to July 1945

Air Chief Marshal Sir Keith Park, Allied Air Commander South-East Asia, recorded 'Each part of the planning and assessment of air lift must be carried out by the Service in whose province it lies' and 'Air supply depends on so many agencies, and is affected by so many imponderables, that the allocation of resources and good

⁸⁷ AHB, *Air Supply Operations in Burma*, p. 38. USAAF units: 100 C-46s and 75 C-45s - Waite Papers, 'Appendix B, Supply By Air Effort, Summary of Operations in Burma Oct 44 to July 45'.

⁸⁸ Slim, pp. 523-528.

⁸⁹ AHB, *Air Supply Operations in Burma*, pp. 38-39; AP3257, p. 519; 'Mr Macrae' personal recollection that weather was the greatest danger in June and July 1945 - 'The RAF and the Far East War 1941-1945', A symposium on the Far East War, RAF Historical Society and RAF Staff College, *Bracknell Paper No. 6*, March 1995, p. 91; HMG, Sir Keith Park, ACM, 'Air Operations in South East Asia 3rd May 1945 to 12th September 1945', *London Gazette No. 39202 of 13th April 1951*, (published 19 April 1951) pp. 2130-2132, 2141-2142. [A despatch submitted to the Secretary of State for Air in August 1946 by Park as Allied Air Commander-in-Chief, South East Asia].

⁹⁰ AP3257, p. 519.

⁹¹ Between 2 January and 1 May 1945, 210,000 tons were delivered by air, 5,500 by road and 38,700 by river via the Chindwin - presentation and personal recollections by Deryck Grocock, Gp Capt (Rtd), 'The RAF and the Far East War 1941-1945', A symposium on the Far East War, RAF Historical Society and RAF Staff College, *Bracknell Paper No. 6*, March 1995, p. 53.

brains to ensure efficiency, speed and good liaison can never be too generous'.⁹²

Air supply was found to be more than having an adequate number of aircraft and aircrews. It needed extensive administration; infrastructure (airfields suitable to handle air transport with depots to store the range of potential cargoes close by, and railways, roads and waterways to haul freight to those depots), and speedy, efficient loading and unloading capabilities for effectively wrapped cargo. The Army and the Air Force needed to cooperate closely; to drop "tribal loyalties"; to understand each other's problems, and for the Army, to appreciate the advantages and the limitations of air transport. At all levels the Army and the RAF needed to co-ordinate their actions and to adopt appropriate best practices.⁹³ The formation of the Army Air Transport Organization [AATO] helped but it did not resolve the difficulties completely.⁹⁴ When the war ended, the British had still to hone their combined-service coordination and their tactics for airlift logistics.⁹⁵ On the positive side, the Army retained the AATO concept after the war. It would play a significant and varied part during the Airlift. Moreover, Brigadier J. A. Dawson, who had been Commander Combined Army Air Transport Organisation within Allied Land Forces South East Asia, was appointed Commander Army Air Transport Organization [CAATO] for the Berlin Airlift.⁹⁶

⁹² HMG, Sir Keith Park, ACM, 'Air Operations in South East Asia From 1st June 1944 to the Occupation of Rangoon 2nd May 1945', Third Supplement to *London Gazette No. 39196 of 6th April 1951* (published 12 April 1951) pp. 1974-1975. [A despatch submitted to the Secretary of State for Air on 16th November 1945 by Park as Allied Air Commander-in-Chief, South East Asia].

⁹³ AHB, *Air Supply Operations in Burma*, pp. 43-50; P. T. O'Kelly de Conejera, Maj, 'Supply By Air', *The RASC Review*, Vol. 2, No. 4, 1961; Slim, pp. 543-546; TNA: AIR 23/2013, Eastern Command Transport Aircraft, in signals throughout the file; CAB 44/215 although at times this narrative appears more about tribal loyalties than the events.

⁹⁴ AHB, *Air Supply Operations in Burma*, pp. 29-30, 45-46.

⁹⁵ AHB, *Air Supply Operations in Burma*, pp. 45-50.

⁹⁶ T. H. Downes, Lt Col, 'The Berlin Airlift', *The Royal Army Service Corps Review*, Vol. 1, No. 1, 1948 (Aldershot: The RASC School, undated); HMG, Sir Oliver Leese, Lt Gen, 'Operations in Burma from 12th November 1944 to 15th August 1945', Second Supplement to *London Gazette No. 39195 of 6th April 1951* (published 12 April 1951) [Despatch to the Secretary of State for War on the 4 February 1947 reporting on his period as C-in-C Allied Land Forces South-East Asia] pp. 1941-1944; Slim, p. 386; D. J. Sutton, ed.-in-chief, Brig, *The Story of the Royal Army Service Corps and Royal Corps of Transport 1945-1982* (London: Leo Cooper, 1984) p. 102.

The organization and command structures in South East Asia were astonishingly complex.⁹⁷ For example during the first half of 1944 Eastern Air Command [EAC], which was commanded by a USAAF Major General, reported operationally to the ACSEA, whose commander was a RAF Air Chief Marshal. EAC had a British RAF officer of equivalent rank (Air Vice Marshal) to the American as assistant commander. One of its subordinate organizations was the Anglo-American Troop Carrier Command [TCC] commanded by a USAAF Brigadier General.⁹⁸ On 1 May 1944, whilst heavily involved supplying Imphal, TCC was placed under the 3rd Tactical Air Force commanded by a RAF Air Marshal.⁹⁹ Operationally Air Marshal Sir John Baldwin was subordinate to the Major General commanding EAC.¹⁰⁰ For all other purposes, however, RAF units - including those in TCC - had different reporting chains.¹⁰¹

There were a number of changes in the last year of the war but for a time separate organizations for administrative control; administrative services, and operational control continued. In October 1944 (15 September according to CG EAC¹⁰²) an expanded TCC became the Combat Cargo Task Force [CCTF] under the command of an American, Brigadier General Frederick Evans, with Air Commodore J. Donald Hardman as his deputy. It remained an integrated American-British task force and once again reported directly to HQ EAC. Its air supply responsibilities covered the ground forces in Burma other than the Americans and Chinese in Northern Burma who were supported by units of the US 10th Air Force. In April 1945 the British element of CCTF became a Transport Command group, No. 232, whilst remaining a

⁹⁷ For example, TNA, WO 203/100, Organizational Chart Eastern Air Command dated 10 February 1945. Although this source is later than the scenario in the paragraph, it displays the complex arrangements that existed for one of AOC-in-C ACSEA's Commands; Saunders, *The Fight is Won*, Appendix XII.

⁹⁸ TNA, AIR 23/1927, Despatch on air operations Eastern Air Command 15 December 1943 - 31 May 1944, p. 4.

⁹⁹ TNA, AIR 2/5665, HQ TCC Lt Col West dated 5 June 1944, p. 8.

¹⁰⁰ TNA, AIR 23/1927, Despatch 15 December 1943 - 31 May 1944, App. A.

¹⁰¹ TNA: AIR 23/1933, Despatch 15 December 1943 - 1 June 1945, p. 4; WO 203/100, Organizational Chart Eastern Air Command dated 10 February 1945.

¹⁰² TNA, AIR 23/1933, Despatch 15 December 1943 - 1 June 1945, p. 9.

component of the task force.¹⁰³ There was a second Transport Command Group, No. 229, in India and Burma. This commanded the British and Commonwealth transport squadrons that were not involved in the immediate support of the combat forces.¹⁰⁴ 'All these anomalies which appear curious, if not incomprehensible' were still being resolved when the Japanese surrendered.¹⁰⁵

As part of the expansion of the RAF in the Far East (and the withdrawal of American airpower from Burma¹⁰⁶) a Transport Force Commander for the whole Far East was proposed. This Air Marshal and his headquarters would have been subordinate to the Air Officer Commanding-in-Chief [AOC-in-C] Transport Command but would have also acted as advisor to the Air Commander-in-Chief South East Asia amongst others. In theatre he would command three groups, Nos. 229, 232, and 238 (the latter for Airborne assault).¹⁰⁷

Park recorded that if 'two R.A.F. squadrons were made available for Airborne training by 1st June [1945], that internal airlines requirements were met, and that U.S.A.A.F. transport squadrons were all out of the Theatre from 10th June [1945], it was calculated that the following transport aircraft would be available 11 June-31 July —8 R.A.F. Squadrons —240 C-47'.¹⁰⁸ Air Marshal Sir Ralph Cochrane wrote that the 'ACSEA Stage II target' was 22 squadrons (4 long range and 18 medium range) split between Nos. 229, 232 and 238 Groups. Three of the long range

¹⁰³ AHB, *Air Supply Operations in Burma*, pp. 29-30, 45-48; TNA, AIR 38/118, Cochrane 2 June 1945, ciphers from AMSO: No. O993 1656 25 February 1945, No. 3929 AEC 961 28 February 1945. Air Mshl Sir Ralph Cochrane became AOC-in-C Transport Command on 15 February 1945 vice Bowhill - M. B. Barrass, 'Air Chief Marshal The Hon Sir Ralph Cochrane' *Air of Authority - A History of RAF Organisation* <www.rafweb.org/Biographies/Cochrane.htm> [accessed 3 August 2013].

¹⁰⁴ AHB, *Air Supply Operations in Burma*, pp. 48-49; TNA, AIR 38/118, E.27A Hand drawn Organization Chart.

¹⁰⁵ AHB, *Air Supply Operations in Burma*, p. 48.

¹⁰⁶ TNA, AIR 23/1933, Despatch 15 December 1943 - 1 June 1945, p. 10.

¹⁰⁷ TNA, AIR 38/118, Cochrane 2 June 1945; Evill (VCAS) 3 January 1945, Bowhill 16 December 1944. ACM Sir Frederick Bowhill was AOC-in-C Transport Command 25 March 1943 until replaced by Cochrane on 15 February 1945 - M. B. Barrass, 'Air Chief Marshal Sir Frederick Bowhill', *Air of Authority - A History of RAF Organisation* <www.rafweb.org/Biographies/Bowhill.htm> [accessed 3 August 2013].

¹⁰⁸ Park, 'Air Operations in South East Asia 3rd May 1945 to 12th September 1945', pp. 2141-2142.

squadrons were Halifax-based intended for the Airborne forces.¹⁰⁹ Planning figures hovered at five heavy bomber squadrons out of a suggested total of 91 squadrons including the 22 transports ones.¹¹⁰ Had the war in the Far East continued the issues inherent in one Command operating transport squadrons owned by another might have been resolved and the limited involvement of heavy bombers might have led to a more balanced appreciation of air power. Instead after the Berlin Airlift the transport force would be greatly reduced to permit expansion of Bomber and Fighter Commands.¹¹¹

As Chapters 5 and 6 show, organizational, inter-Service and international challenges were present during the Berlin Airlift. There would be complicated chains of command; more organizations with which to cooperate; closer Governmental involvement, and a larger international dimension. British Government departments would include the Air Ministry, Foreign Office, Ministry of Civil Aviation, Ministry of Supply, Treasury and War Office. In Germany there would be the American, British and French occupation authorities and the German administration.¹¹²

Rangoon was captured, and in spite of all the difficulties, the Allies received infinitely better support than the Japanese. Park recorded Major General Ichida (Vice Chief of Staff, Japanese Burma Area Army) as saying:

The Japanese in Burma had not reckoned with two important and vital factors which upset their calculations and placed their forces at disastrous disadvantages:

(a). Allied air supply, which permitted ground forces in Burma to consolidate their positions without being forced to retreat and thus rendered the enemy's infiltration and encircling tactics abortive.

¹⁰⁹ TNA, AIR 38/118, Cochrane 2 June 1945.

¹¹⁰ TNA: AIR 2/5642, AM OX1206 2 May 1945; AIR 2/5643, AM MSW716 16 June 1945, ACSEA O324 18 July 1945.

¹¹¹ Hansard 'Mr. A. Henderson's [Secretary of State for Air] Statement' (and questions arising), HC Deb 15 March 1949 Vol. 462 cc1928-2066; 'Defence' debate, HC Deb 16 March 1950, Vol. 472 cc1264-1399; 'Mr A. Henderson's [Secretary of State for Air] Statement' (and questions arising), HC Deb 21 March 1950 Vol. 472 cc1765-822; HMG, 'Statement on Defence 1950', Command 7895 (London: HMSO, March 1950); TNA: CAB 131/9, D.O. (50) 5 - 1950 Statement on Defence: Note by Minister of Defence: Draft for Defence Committee, p.5; DEFE 7/5, Statement on Defence 1950 (White Paper); PREM 8/1161, Draft White Paper on Defence 1950.

¹¹² AP3257, pp. 7-10, 66-68.

(b). Allied air superiority, which so disrupted Japanese supply lines, both in Burma and further afield, that starvation and illness overtook thousands of Japanese troops facing the Fourteenth Army and also denied them the essential supplies of fuel, equipment and material with which to fight a better equipped and supplied, Allied Force.¹¹³

Japanese logistics arrangements were parlous even without Allied intervention.¹¹⁴

Park emphasized further the part played by air transport reporting that: 'Thanks mainly to Allied air superiority, and resulting air supply, they had withstood the siege of Imphal, and, on the siege being raised, had taken the offensive down through Burma with the knowledge that fuel, rations, ammunition and miscellaneous equipment would be air-dropped or air-landed to them'.¹¹⁵ Air Commodore J. Donald Hardman, Deputy Commander CCTF and Air Officer Commanding [AOC] No. 232 Gp., might be perceived, albeit on a much smaller scale, as Britain's Tupper. He recorded that:

The whole campaign has been a striking illustration of a fact new in warfare - namely that airpower can be used to transport, supply and support ground troops entirely independently of ground channels. This has been South East Asia's contribution to the art of war.¹¹⁶

With accolades like those of Park and Hardman, the India-Burma campaigns of 1944-1945 should have had significant impact on the post-war RAF. However, Henry Probert wrote: 'Yet incredibly those back in the UK, [Marshal of the Royal Air Force - Chief of the Air Staff - Sir Charles] Portal downwards, were unaware of the RAF's overall contribution and in particular the 14th Army's dependence on it for its maintenance'.¹¹⁷ Given that these campaigns (and their commanders) lacked the

¹¹³ Park, 'Air Operations in South East Asia 3rd May 1945 to 12th September 1945', p. 2154, para. 341.

¹¹⁴ Slim, pp. 537, 539.

¹¹⁵ Park, 'Air Operations in South East Asia 3rd May 1945 to 12th September 1945', para. 343.

¹¹⁶ Henry Probert, Air Cdre (Rtd), ex-head of the AHB, 'Supply: Two Wartime Examples' part of the 'Supply-an Airpower Enabler' Symposium, *The Journal of the Royal Air Force Historical Society*, No. 35 (Abingdon: Advance Book Printing, 2005) pp. 39-40 (for Hardman quotation). Probert was an RAF Education officer who joined the RAF in 1948. Whilst his experience was not first hand, he had made a special study of the RAF in Burma - Anon, 'Air Commodore Henry Probert' *Obituaries*, Telegraph 30 Jan 2008.

¹¹⁷ Probert, p. 40.

immediateness and the profile of those in Europe and the Mediterranean his statement appears reasonable.¹¹⁸ However, it does not correlate entirely with the correspondence that took place in 1944 and 1945 between the Vice Chief of the Air Staff [VCAS], the Air Member for Supply and Organization [AMSO] (both members of the Air Council), the two wartime AOCs-in-C of Transport Command and ACSEA. This reflected a growing awareness about the importance of air transport in the Far East.¹¹⁹

It is the degree to which this army's dependence on air supply was recognized and the acceptance of its general applicability that is important. By the late 1940s the last paragraph of the AHB monologue about air supply in Burma stated that:

These facts clearly discourage any tendency to regard the air supply achievements in Burma as a basis for a world-wide doctrine. Air supply is inevitably uneconomical in comparison with land or sea lines of communication, when the latter are available. It does not, therefore, follow from the success of this new technique, great as are its potentialities in conflicts carried out over territory similar to that of Burma, that it can be regarded as of universal application irrespective of tasks, opposition or terrain.¹²⁰

The wording was composed just before or in the early stages of the Airlift and undoubtedly reflected the RAF's position at the time, air supply in South East Asia Command [SEAC] had been atypical.

Air supply in SEAC did not join the Battle of Britain and Bomber Command as RAF icons in the post-war period. It had not benefited from the equivalent of five years of wartime propaganda about the heavy bomber that followed 20 years of Trenchardian theory that 'Victory can be achieved by bombing enemy vital centres, thus breaking the enemy's will to fight'.¹²¹ There was no 'Few' just the 'Forgotten Army'. Furthermore, it was a question of size. In July 1944 the RAF element of the Allied Expeditionary Force, including the Air Defence of Great Britain, comprised ten

¹¹⁸ Slim, pp. 181, 194.

¹¹⁹ TNA, AIR 38/118.

¹²⁰ AHB, *Air Supply Operations in Burma*, p. 51.

¹²¹ IWM, 'Trenchard's Theory', *Airpower Theorists* <www.iwar.org.uk/military/resources/aspc/text/theory/trench.htm> [accessed 21 May 2013].

groups and 146 squadrons.¹²² Bomber Command had had eight operational groups controlling 129 squadrons, although the latter were not all operational at one time.¹²³ There had been a mere maximum of eight RAF and two Royal Canadian Air Force [RCAF] transport squadrons permanently assigned to the Indian-Burma theatre and the majority of the airlift capacity had come from the USAAF.¹²⁴

No one at the highest level elected to apostolate air supply. Park retired in 1946 and Louis Mountbatten (ex-Commander-in-Chief [C-in-C] SEAC and then Viceroy of India) was filling a rear admiral's command in the Mediterranean. Given the nation's financial difficulties; the political priorities of the time, and the infighting for limited resources between the Services and within the RAF, it is difficult to see what even the most powerful and well publicized advocate could have achieved prior to the Airlift. Once the Blockade had started it would have been generally too late aside from advocating early reassignment of the Dakota air and ground crews - Air Vice Marshal Charles Guest's 'more an embarrassment than a really effective load-carrier' - to improve the utilization of the larger four-engine aircraft¹²⁵ and the temporary use by the RAF of spare four engine Avro Tudor airliners as cargo hauliers.¹²⁶ The latter would, however, have been opposed by Air Marshal Sir Brian Baker, AOC-in-C Transport Command.¹²⁷

By the time of the Airlift, Hardman was an Air Vice Marshal and Assistant Chief of the Air Staff (Operations) [ACAS(Ops)] in the Air Ministry. His rank was too senior to command the British contingent and his career was marked for higher things and not as the transport specialist that Tunner was labelled. In spite of the Airlift and his relatively close involvement with it in the Air Ministry, he was posted as

¹²² Ken Delve, *The Source Book of the RAF* (Shrewsbury: Airline Publishing Ltd., 1994) pp. 69-72.

¹²³ AHB, 'Bomber Command Commanders of World War II: The Group Commanders' and 'Royal Air Force Bomber Command Squadron Histories', *Royal Air Force Bomber Command 60th Anniversary*, <www.raf.mod.uk/bombercommand/group.html and www.raf.mod.uk/bombercommand/squadrons.html> [accessed 8 February 2012].

¹²⁴ AHB, *Air Supply Operations in Burma*, pp. 23, 29-38.

¹²⁵ TNA, AIR 2/10064, E.11 M157 Guest 25 August 1949.

¹²⁶ TNA, AIR 20/6891, Meeting 20 September 1948. See thesis Chaps. 5 and 6.

¹²⁷ TNA, Air 24/2047, Minutes of AOC-in-C Staff Conference 6 September 1948.

Commandant of the RAF Staff College Bracknell in January 1949. An appointment as Chief of Staff of the Royal Australian Air Force [RAAF] followed and then, as an Air Chief Marshal, as Air Member for Supply and Organisation in 1954. His career path after Burma reflected ability and it avoided him being pigeonholed as a specialist.¹²⁸ His successor at ACAS(Ops), Air Vice Marshal Charles Guest, had also commanded air transport in South East Asia (AOC No. 229 Group) and he would become AOC-in-C Transport Command, but at the start of the Airlift he was also too senior.¹²⁹ Whilst both Hardman and Guest were too senior for the Operation PLAINFARE command, they would have been too junior to have been successful as the RAF's post war airlift advocates had they chosen to do so.

Rainsford, an acting Group Captain, with a wartime experience in heavy bomber operations, became responsible within the Air Ministry for the daily implementation of Government policy for supplying Berlin by airlift. Prior to the Airlift his department's main responsibilities were the planning and operational policies for the RAF's small transport force. The air transport role after the war concentrated on the routine air carriage of mainly high priority passengers and a little freight with growing emphasis on the 'Trunk Route' to Singapore; the provision of services to the Foreign Office in the absence of British civil aviation; tactical air support for the army via training for parachute and glider-borne landings, and contingency planning for the carriage of evacuees from and reinforcements to garrisons worldwide in emergency.¹³⁰ Moreover, as Chapters 5 and 6 will show, Britain had insufficient aircrews and effective robust aircraft for them to fly. Furthermore, the RAF, unlike the Americans, did not deploy an appropriately experienced commander and

¹²⁸ M. B. Barrass, 'Air Chief Marshal Sir Donald Hardman (15155)', *Air of Authority - A History of RAF Organisation* <www.rafweb.org/Biographies/Hardman.htm> [accessed 14 February 2013]; RAAF Air Power Development Centre, 'Air Marshal Donald Hardman appointed CAS History', 14 January 1952, *Record Time Line*, <airpower.airforce.gov.au/HistoryRecord/HistoryRecordDetail.aspx?rid=256> [accessed 14 February 2013].

¹²⁹ M. B. Barrass, 'Air Marshal Sir Charles Guest', *Air of Authority - A History of RAF Organisation* <www.rafweb.org/Biographies/Guest.htm> [accessed 14 February 2013].

¹³⁰ F. F. Rainsford, *Memoirs of an Accidental Airman* (London: Harmsworth, 1986) pp. 100-101, 104. TNA, AIR 24/2046, HQ TC ORB June 1948 gave an example of one month's tasks with scheduled services to Berlin, the Far East, Egypt and Nairobi, and Warsaw, VIP flights, special operations, ferry flights, and communications flights.

management team to the Airlift.¹³¹ This was not the basis from which to rapidly implement a major airlift to supply two million people. Fortunately AATO had been retained in the Army which helped the British evolve successful Airlift tactics on the ground and an experienced Brigadier was appointed as CAATO for Operation PLAINFARE.¹³² It is within the RAF that the lessons available to be learnt had been mislaid.

In Mid-July 1948 not all in the US military were able initially to envisage a long-term airlift that could meet the minimum requirements of over two million blockaded Berliners.¹³³ Similar views were held in Britain where Field Marshal Viscount Montgomery, Chief of the Imperial General Staff, stated that: 'In submitting the paper to the Minister of Defence it should be made clear that it would in fact prove impossible to nourish and sustain the western sectors of Berlin by air transport alone'.¹³⁴ After all, even as early as October 1948 the Berlin Airlift hauled 147,581 short tons which was more than double the best the Hump achieved at 71,042 tons in July 1945.¹³⁵ True, the distance from the US Zone in Germany to Berlin was half that for the Hump and the mountains only a quarter as high¹³⁶, but for those without the detailed airbridge experience (and the vision) necessary to extrapolate, tonnage-achieved would have been what mattered. Moreover, as Chapters 5 and 6 and the Chronology at Appendix 8 reveal, bringing together the American Airlift task force; crewing it with specially trained personnel, including recalling reservists, and renovating, extending and even building airfields took time and during the winter of 1948-1949 the cautious views were very nearly right.

¹³¹ AP3257, pp. 7-11.

¹³² AP3257, pp. 66-68.

¹³³ Control Commission for Germany (British Element), *Notes on the Blockade of Berlin 1948: from a British viewpoint in Berlin* (Berlin: Printing and Service Control Commission for Germany (BE), 1949) p. 17; Daniel F. Harrington, 'The Berlin Blockade Revisited', *The International History Review*, Vol. VI, No. 1, February 1984, p. 99; Roger G. Miller, *To Save a City: The Berlin Airlift, 1948-1949* (College Station, TX: Texas A&M University Press, 2000) pp. 80-81.

¹³⁴ TNA, AIR 8/2607, COS(48) 106th Meeting, 28 July 1948. Paper referred to, JP (48) 86 (Final) dated 26 July 1948, used a hypothetical airlift capacity of between 3,850-4,050 tons (probably long tons).

¹³⁵ AP3257, p. 519.

¹³⁶ See thesis Chap. 5 based on Rhein-Main AFB and Chap. 6 'Repositioning the British Airlift in the South' section.

The Airlift's conception needed powerful advocates. Albert C. Wedemeyer had been Mountbatten's Chief of Staff and after 27 October 1944, Chief of Staff to the Generalissimo Chiang Kai-shek.¹³⁷ In 1948 he was a Lieutenant General in the US Army and the Director of Plans and Operations of its General Staff. On the 24-25 June 1948 he was flying to Europe on a routine inspection with William H. Draper, Undersecretary of the Army and another important member of the US military hierarchy. During the flight, using Wedemeyer's Hump experience and possibly that of the Indo-Burma campaign and Draper's of the US air transport fleet and the supplies Berlin would need, they calculated that an airlift 'might work'. In Europe they discussed the possibility with Bevin and Clay.¹³⁸

The idea of an airlift was not new to either Bevin or Clay. On 25 June 1948, in a meeting with ministers, the Deputy British Military Governor - Major General Nevil Brownjohn - had been 'pessimistic' about an air supply solution. 'Bevin was not all satisfied...and demanded, as a matter of urgency, technical advice'.¹³⁹ Clay, together with Major General Edwin Herbert - General Officer Commanding [GOC]

¹³⁷ Anon, 'Gen. Albert C. Wedemeyer, 92, Noted Military Planner for U.S.', *The New York Times* 20 December 1989 <www.nytimes.com/1989/12/20/obituaries/gen-albert-c-wedemeyer-92-noted-military-planner-for-us.html?pagewanted=all&src=pm> [accessed 2 February 2012]; Slim, p. 384.

¹³⁸ Alan Bullock, *Ernest Bevin - Foreign Secretary 1945-1951* (Oxford: Oxford University Press, 1985) pp. 572, 576-577; Lowell Bennett, *Berlin Bastion* (Frankfurt: Fred Rudl, 1951) p. 44; Miller, *To Save a City* (Texas A&M) p. 90; during the 28 June 1948 Bevin/Draper/Wedemeyer meeting when the former pressed the Americans the latter was recorded as stating that: 'they [the USA] ought soon to be able to do at least as well as they had done in supplying China over the Hump' - TNA, FO 800/467, E.64 Roberts 29 June 1948; Ann and John Tusa, *The Berlin Airlift* (Staplehurst: Spellmount, 1998) p. 155; Daniel Yergin, *Shattered Peace: the origins of the cold war and the national security state* (London: Deutsch, 1978) p. 377.

¹³⁹ Bullock, p. 575; TNA: CAB/128/13/3, Cabinet 43(48) Conclusions 25 June 1948 Item 3; FO 371/70497, E.113 McNeil to Prime Minister 24 June 1948.

An airbridge appeared to be an instinctive reaction by Bevin - Bullock, and also Jean Edward Smith, *Lucius D. Clay: An American Life* (New York: Holt and Co., 1990). Initially, however, Bevin saw a large airbridge as a display of resolve and Western airpower, and a boost to morale in the City but not as the means to sustain two million western Berliners - TNA: FO 371/70496, Es:69-80 subfolder 'Discussion by Cabinet on Situation in Berlin' 25-29 June 1948; FO 371/70497, Es:57-58 No. 6962 Bevin 28 June 1948 and E.70 No. 6963 Bevin 28 June 1948 to the British Ambassador to the United States, and Es:125-126 summary of short discussion led by Bevin with Brownjohn present on 25 June 1948. By August Bevin was pushing the Americans to participate in a 7,000-8,000 tons per day Airlift - TNA, FO 800/467, Es:92-93 Bevin 11 August 1948

British Troops Berlin - and General Sir Brian Robertson - British Military Governor - had seen the airbridge calculations of Air Commodore Reginald Waite, done on the 23/24 June 1948.¹⁴⁰ (Waite was Head of Air Section, Combined Services Division of the Control Commission and had no air transport experience.¹⁴¹)

The Airlift was no single person's idea. It arose from multiple inputs and was perceived as a temporary solution pending diplomatic resolution of the Blockade.¹⁴² (JP (48) 86 (Final) 26 July 1948 recorded that an airlift was not a permanent solution but could maintain the status quo for six months¹⁴³ whilst Smith cited the 10 August 1948 telegram from Robertson to Bevin which 'doubted if Berlin could be supplied much longer'.¹⁴⁴)

SOVIET AIR TRANSPORT IN THE SECOND WORLD WAR

The investigation into precedent and Soviet decisions during the Berlin Airlift is constrained by the material available in English; ideological and political constraints, and at Leningrad and Stalingrad, the conditions at the time. The Soviets did not

¹⁴⁰ Bullock, p. 576; TNA, MOD, 'The Berlin Airlift', *Fact Sheets* <webarchive.nationalarchives.gov.uk/+/mod.uk/defenceinternet/factsheets/theberlinairlift.htm dated 4 May 2010> [accessed 2 February 2012]; Romilly Waite [Compiled by], *Air Commodore R.N. Waite C.B., C.B.E., R.A.F.: The Berlin Airlift* <pdf download from www.bbaa-airlift.org.uk/page20.html> [accessed 3 February 2012].

The research did not locate archival details for Waite's calculations and thus the objectives of his work are uncertain. Harrington postulated recently that Waite's figures did not include coal - Daniel F. Harrington, *Berlin on the Brink: the Blockade, the Airlift and the early Cold War* (Lexington KY: The University Press of Kentucky, 2012) p. 101. Brownjohn paraphrasing a telegram from London gave 2,000 tons per day 'to maintain the present ration scale in the three sectors' - TNA, AIR 20/7804, E.143 Brownjohn 30 June 1948. It was not until 7 July 1948 that Maj Gen Eric Bastyan - i/c Administration BAOR - received an estimate of 1,000-1500 tons for coal - TNA, AIR 20/7804, Es:134-135 Bastyan 8 July 1948. The actuality was larger. The revised Airlift daily target set on 20 October 1948 allocated 4,827 tons per day to the western Berliners of which 1,435 was for food and 3,084 was for coal - AP3257, p. 301.

¹⁴¹ M. B. Barrass, 'Air Commodore R N Waite (16017)' *Air of Authority - A History of RAF Organisation* <www.rafweb.org/Biographies/Waite.htm> [accessed 2 February 2012]; Liddell Hart Centre for Military Archives, King's College London, 'Waite papers'; HMG, Supplement to *The London Gazette No. 38490 of 28th December 1948* (published 31 December 1948); TNA, Air 20/7816, *ALREP Correspondence*.

¹⁴² TNA, AIR 8/2607, COS(48) 106th Meeting, 28 July 1948.

¹⁴³ TNA, AIR 8/2607, JP (48) 86 (Final) dated 26 July 1948.

¹⁴⁴ Smith, *Clay*, pp. 513-514; TNA, FO 800/467, Es:88-89 Military Governor No.1596 10 August 1948: 'it is not possible to keep Berlin supplied by air through the winter'.

mount an airbridge operation similar in size to either the Hump or Imphal and it is necessary to look wider to gain insight into precedents for the Soviet reaction to the Berlin Airlift. Stalin's character and method of rule cannot be ignored either. He was an individual to whom advice was given cautiously. Specialists chose to keep quiet rather than risk execution (and the Gulag for their families). Moreover, Stalin's relationship with Leningrad was generally negative. He opposed special recognition of the city's wartime experience; a crackdown on its intelligentsia started in summer 1946, and a purge had begun there in February 1948.¹⁴⁵ Consequently, this analysis tends towards "what is reasonable to conclude" rather than what is certain.

During their Great Patriotic War the Soviet airpower doctrine centred on air defence of the USSR's centres of production and close air support of its field armies. This can give the impression that its various air forces' inventories comprised only single-engine fighters and ground attack aircraft, and twin-engine light and medium bombers engaged in short-range flying.¹⁴⁶ This view was reinforced by Tunner writing that:

The Russians did not understand instrument flying themselves and therefore did not believe that we could maintain the [Berlin] Airlift during the long European winter. Frequently a cloud cover extending from five hundred feet on up to five thousand feet could cover the entire region..... I am convinced that the Russian unfamiliarity with instrument flying led them to take our airlift too lightly. They did not think we could do it.¹⁴⁷

Whilst lack of instrument flying experience may have been the case for the tactical air forces (which were present in strength in eastern Europe in the late 1940s) the

¹⁴⁵ David M. Glantz, *The Battle for Leningrad 1941-1944* (Lawrence KS: University Press of Kansas, 2002, BCA edn., 2004) pp. xiii-xiv; Yefim Gordon and Dmitri Khazanov, with Alexander Medved, *Soviet Combat Aircraft of the Second World War, Volume 2: Twin-engined Fighters, Attack Aircraft and Bombers* (Leicester: Midland Publishing, 1999) p. 11; Michael Jones, *Leningrad: State of Siege* (London: John Murray, 2009) pp. 4-5, 278-279; Thomas Nigel, *World War II Soviet Armed Forces 1939-1941* (Botley Oxford: Osprey, 2010); Anna Reid, *Leningrad: Tragedy of a City Under Siege, 1941-44* (London: Bloomsbury, 2011) Chap. 22; Harrison E. Salisbury, *The Siege of Leningrad* (London: Secker and Warburg, 1969) pp. 499-505, 580-581; Yergin, Chap. 1.

¹⁴⁶ Yefim Gordon and Dmitri Khazanov, *Soviet Combat Aircraft of the Second World War, Volume 1 Single-engined Fighters* (Leicester: Midland Publishing, 1998) and Gordon and Khazanov, *Soviet Combat Aircraft, Volume 2*, generally; Bill Gunston's 'Introduction' to *Soviet Combat Aircraft of the Second World War, Volume 1* p. 8.

¹⁴⁷ Tunner, pp. 184-185.

Soviet Union had operated a small long range bomber force during the war, including Lend-Lease North American B-25s (which were fitted with appropriate instrument flight rules [IFR]¹⁴⁸ instrumentation as standard). This force was nowhere as successful as the tactical air forces but it flew in winter; above extensive cloud, and at night. The Soviet navy operated Lend-Lease flying boats and the Air Defence Forces¹⁴⁹ employed night fighters fitted with indigenous Gnejs radar. Thus there was some IFR capability across the Soviet air forces.¹⁵⁰

The pre-war Tupolev TB-3 four-engine heavy bomber had also been used in civilian guise as a long range transport. 818 TB-3s were built and after initially serving as a bomber during the Second World War the survivors were converted to transport duties. The Soviet Union also manufactured the Lisunov Li-2 (initially termed PS-84) aircraft, a licensed derivative of the Douglas DC-3. By the war's end between 2,500 and 3,000 Li-2s had been built. Whilst large numbers were used as night bombers and aircrew trainers, some of them and 707 Lend-Lease C-47s were employed as transports.¹⁵¹ Thus the Soviets had an air transport capability and Pavlov, for example, mentioned the Li-2 as part of the Leningrad airlift.¹⁵²

The siege of Leningrad was one of the key Soviet (and subsequently Russian) memories of its war.¹⁵³ It started officially on 8 September 1941. Air

¹⁴⁸ As opposed to visual flight rules.

¹⁴⁹ Voyska Protivo Vozdushnaya Oborona.

¹⁵⁰ Carl-Fredrik Geust, and Gennadi Petrov, *Red Stars Volume 4: Lend-lease aircraft in Russia* (Tampere, Finland: Apali Oy, 2002) pp. 199-202, 205-207; Gordon and Khazanov, *Soviet Combat Aircraft of the Second World War, Volume 1*, pp. 144-145; Gordon and Khazanov, *Soviet Combat Aircraft of the Second World War Volume 2*, pp. 11, 92, 103, 110, 132-136. The first unit to reach operational status with the Soviet copy of the B-29, the Tupolev Tu-4, did not do so until May 1949.

¹⁵¹ Geust and Petrov, pp. 183, 206-208; Gordon and Khazanov, *Soviet Combat Aircraft of the Second World War Volume 2*, pp. 140-144; Peter Hillman, S. Jessup and G. Ottenhof, 'Lisunov Li-2 (PS-84)', *Soviet Transports* <www.oldwings.nl/st/li2.pdf, 2004> [accessed 30 September 2011]; J. Rickard, *Lisunov Li-2/PS-84* <www.historyofwar.org/articles/weapons_lisunov_li-2.html, November 2008> [accessed 30 September 2011].

¹⁵² Dmitri Vasilievich Pavlov, trans. John C. Adams, *Leningrad 1941: The Blockade* (Chicago: Chicago University Press, 1965) pp. 104-106.

¹⁵³ Tanya Zhidkova, [Bilkent Üniversitesi] 'Today, January 27 is the 69th anniversary of the End of Siege of Leningrad. No one is forgotten, nothing is forgotten' <english.ruvr.ru/2013_01_27/69th-anniversary-of-end-of-Siege-of-Leningrad/, dated 27 January 2013>.

communications were instigated shortly thereafter to carry passengers, mail and freight in a similar fashion to the RAF's P.19 communications flights before and during the Berlin Airlift. These continued throughout the siege which ended officially on the 27 January 1944. In the autumns of 1941 and 1942 and the spring of 1942 as the ice was forming or thawing on Lake Ladoga, air transport provided the only connection between the City and unoccupied USSR.¹⁵⁴

Statistics for the Leningrad airbridge vary between sources and not solely because the periods covered differ. However, from the start of the siege to the end of 1941 the maximum tonnage appeared to be 6,186 inbound and 1,017 outbound together with 50,099 evacuees. 64 planes were allocated to the task of which 20 or 22 were serviceable on average. Pavlov records that both transport aircraft and heavy bombers were used to fly in highly nourishing compact food.¹⁵⁵ When Novaya Ladoga had been available as the consignor airfield, five or six return trips to Leningrad per day were possible but after Luftwaffe attacks two thirds of the force was dispersed to more remote airfields from which they flew two return journeys. Flights were intercepted by the Luftwaffe and so flew in formation, often with fighter escort.¹⁵⁶

Pavlov viewed the airlift as 'costly' consuming thousands of tons of fuel; diverting transport aircraft from important military operations and aircraft were lost.¹⁵⁷ Given the priority accorded to the defence of Moscow and the losses suffered by the Soviet air forces during 1941, at first sight it is surprising that any aircraft were allocated to carry freight into Leningrad. However, the inbound airlift has to be viewed alongside the importance accorded by the Soviet leadership to the outbound loads of

¹⁵⁴ Allaz, p. 156; Leon Gouré, *Siege of Leningrad*, (Stanford: Stanford University Press, 1962) pp. 109, 130, 153; John Erickson, *The Road to Stalingrad* (London: Weidenfeld and Nicolson, 1977) pp. 190-191; John Erickson, *The Road to Berlin* (London: Cassell Military Paperbacks, 2003) p. 174; Glantz, *Battle for Leningrad*, p. 60; Reid, p. 335; Salisbury, pp. 526, 567 (which lists several start dates).

¹⁵⁵ Allaz, p. 156; Erickson, *Road to Stalingrad*, pp. 191, 236-237, 262, 264; Glantz, *Battle for Leningrad*, p. 133; David M. Glantz, *Leningrad: City under Siege 1941-1944*, (Rochester: Grange Books, 2005) pp. 66-70; Geust and Petrov, pp. 158-161; Pavlov, pp. 104-106, 115, 162; Reid, pp. 157, 202; Salisbury, pp. 263, 301, 382, 395-396, 401, 409, 526.

¹⁵⁶ Gouré p. 153; Pavlov, pp. 104-106; Salisbury p. 401.

¹⁵⁷ Pavlov, pp. 104, 106.

priority skilled workers; industrial machinery; locally produced weapons and munitions; apparatchiks and intelligentsia.¹⁵⁸

To put the size of the 1941 Leningrad airlift into perspective, it totalled about 9% of that delivered to western Berlin in July 1948, the first full month of the Berlin Airlift. Similarly the total Soviet backload tonnage was only 71% of the RAF equivalent for July 1948. It was only in terms of the 50,099 evacuees that the Leningrad airlift proportionally exceeded the Berlin Airlift.¹⁵⁹ As at Stalingrad, which is examined shortly, the Leningrad airlift failed to meet its daily target of 200 tons, delivering approximately 80 tons per day.¹⁶⁰

The significance of the Siege of Leningrad extends beyond its airlift. Although almost entirely delivered by vehicles and boats, the effort committed to sustain the city showed what a country might do logistically to maintain its position. (Of course, the welfare of the average Leningrader had not been the prime objective). At the start of the Berlin blockade Clay, his political adviser, Robert D Murphy, and the head of the Foreign Office's German Department, Sir Patrick Dean believed that no nation would deliberately starve a city to death to achieve its objectives.¹⁶¹ The Siege of Leningrad - which was covered at the Nuremberg Trial - should have challenged their thinking.

The Germans had intended to exterminate Leningrad's population by starvation. The 28 June 1964 *Red Star* newspaper wrote that 'No one knows exactly how many people died in Leningrad and the Leningrad area'.¹⁶² Whilst almost certainly an underestimate, the 1946 Nuremberg Trial recorded that 641,803 civilians died in Leningrad, Pushkin and Peterhof during the siege from starvation.¹⁶³ The western

¹⁵⁸ Reid, pp. 40, 152-157; Salisbury, pp. 395-396.

¹⁵⁹ AP3257, App. R; Salisbury, p. 382.

¹⁶⁰ Allaz, p. 156; Morzik, pp. 180, 193; Salisbury, p. 382.

¹⁶¹ Erickson, *The Road to Berlin*, pp. 60-61, 167-168; Glantz, *City under Siege*, pp. 68-69; Daniel F. Harrington, *The Air Force Can Deliver Anything: A History of the Berlin Airlift* (Ramstein AFB: USAFE History Office, 1998) p. 14.

¹⁶² Salisbury, pp. 514 (for quotation), 516.

¹⁶³ Salisbury, p. 514; The Avalon Project, Lillian Goldman Law Library, Yale Law School, 'Nuremberg Trial Proceedings Vol. 7, Sixty-Second Day Tuesday, 19 February 1946' <avalon.law.yale.edu/imt/02-19-46.asp> [accessed April 2013] and 'Nuremberg Trial Footnote continues on next page.

Berliners may have been cold and their meals monotonous but they were infinitely better placed than the average Leningrader had been in the winter of 1941-1942. Resupply to Leningrad is thus important but as it was not achieved through an airbridge, a separate annex has been attached at Appendixes 1 and 2.

Research into Soviet Second World War sources has been limited owing to availability of reliable material and the paucity of significant air transport operations. The Soviets had planned to use air supply to support their armoured forces during the liberation of Inner Mongolia, Manchuria and Korea in August 1945. This campaign has been covered from the ground force perspective by a Russian speaking US Army officer, David Glantz¹⁶⁴, and more recently on television by Star Media using Russian sources¹⁶⁵. A generic picture was given of a spectacularly fast and deep penetration by the Sixth Guards Tank Army which strained its logistic resources to breaking point with units experiencing severe fuel shortages and with the whole army stalled for want of fuel on 12 and 13 August 1945. The supply lines stretched back 700 kilometres and vehicle attrition was substantial due to the terrain. An airlift started on 11 August with possibly 400 unspecified aircraft making 160 deliveries per day.¹⁶⁶ Whilst the size of the airlift was uncertain, it was clear that only part of the army was able to continue its advance on the 14th. After joining up with air-landed detachments at Changchun and Mukden on 21 August, Sixth Guards Tank

Proceedings Vol. 8, Sixty-Fifth Day, Friday, 22 February 1946' <avalon.law.yale.edu/imt/02-22-46.asp> [accessed April 2013].

¹⁶⁴ David Glantz, 'August Storm: Soviet Tactical and Operational Combat in Manchuria 1945', *Leavenworth Paper No. 8* (Fort Leavenworth: Combat Studies Institute, US Army Command and General Staff College, 1983); David Glantz, 'August Storm: The Soviet 1945 Strategic Offensive in Manchuria', *Leavenworth Paper No. 7*, (Fort Leavenworth: Combat Studies Institute, US Army Command and General Staff College, 1983); David Glantz, 'The Soviet Airborne Experience' *CSI Research Survey No. 4* (Fort Leavenworth: Combat Studies Institute, US Army Command and General Staff College, Nov 1984); David M. Glantz, *The Soviet Strategic Offensive in Manchuria, 1945: "August Storm"* (London: Frank Cass Publishers, 2003).

¹⁶⁵ Anna Grazhdan, Director, 'War Against Japan', Episode 10 of *Soviet Storm: WWII in the East, Second Series*, (Star Media, broadcast on 1st Channel Russia OJSC, retransmitted in English on Sky Military History Channel, 21 May 12).

¹⁶⁶ Glantz, *Leavenworth Paper No. 7*, Chap. 7 cited the aircraft as coming from 453d Aviation Battalion whilst Grazhdan, stated two divisions of 12th Air Army were diverted. Precision was not helped because Glantz lists at Chap. 4 the total air assets of the front as 1,324.

Army had to travel on to Port Arthur by rail because of continued fuel shortages.¹⁶⁷ To what degree the problems of resupply experienced in August 1945 affected Soviet Airlift thinking in 1948 is unclear as the invasion succeeded without embarrassment because the Japanese failed to resist the Sixth Tank Army.¹⁶⁸

A second siege that penetrated deeply into the Soviet consciousness was their victory at Stalingrad.¹⁶⁹ Tunner recorded that: 'Perhaps the failure of the German airlift at Stalingrad was one of the factors in the early Russian reaction to the American-British Airlift into Berlin. The Russians had never had an airlift themselves, and they didn't take ours seriously until it was too late.'¹⁷⁰ Thus why did the German airbridge fail and what were its precedents that may have misled the Soviets?

Stalingrad Airbridge

The Stalingrad airbridge was one of many air supply operations undertaken by the Germans during World War II. It and two others that impacted on it were examined: Demyansk and Tunisia. At Demyansk the Soviets surrounded 95,000 Germans. An airbridge started on 19 February 1942 with its peak activity ending on 18 May 1942 when a degree of surface communication was re-established. The aircraft were almost entirely tri-engine Junkers Ju52/3Ms and the operation was commanded by Colonel Morzik.¹⁷¹

Records for the Demyansk airbridge are probably inaccurate¹⁷² but between 19 February and 18 May 1942 Hushke's figures averaged 273 tonnes delivered per day whilst Morzik's were 302 tons against the absolute minimum inbound requirement of 300 tonnes per day from Hushke and 300 tons from Morzik. Hushke also recorded

¹⁶⁷ Glantz, *Leavenworth Paper No. 7*, Chap. 7; Grazhdan.

¹⁶⁸ Glantz, *Leavenworth Paper No. 7*, Chap. 7.

¹⁶⁹ Antony Beevor, *Stalingrad* (London: Penguin, 1999); David Eades, 'Russia marks 70th anniversary of Battle of Stalingrad', *BBC New Europe*, 2 February 2013 <www.bbc.co.uk/news/world-europe-21306567> [accessed 7 March 2013].

¹⁷⁰ Tunner, p. 184.

¹⁷¹ Allaz, p. 154; Glantz, *The Battle for Leningrad*, p. 298; Hushke, pp. 13-22; Morzik, pp. 141-175; Plocher, pp. 81-86; Kevin Conley Ruffner, *Luftwaffe Field Divisions 1941-45* (London: Osprey 1990) pp. 7-9.

¹⁷² Hushke, pp. 21-22; Morzik, p. 172.

that 22,093 wounded were evacuated during the same period.¹⁷³ Demyansk was at the time considered a success because the trapped German forces were supplied until relieved.¹⁷⁴

Morzik, however, argued that the operation was 'badly prepared, carried out at the cost of tremendous expenditure in materiel and effort', and so 'must be booked as a failure whose superficial success brought with it the danger of too easy recourse to the employment of air support as a stop gap solution'.¹⁷⁵ 300 aircraft were diverted from aircrew training for four months which Morzik called 'catastrophic'.¹⁷⁶ The operation also revealed 'a lack of experience on the part of the Army in air transportation of supplies and to the hampering effects of bureaucracy and poor organization'.¹⁷⁷ It is most unlikely that the lessons from Demyansk influenced American or British thinking and some of its perceived success factors, for example simple, clear-cut command and control arrangements, were absent from the Berlin Airlift, as Chapters 5 and 6 reveal.¹⁷⁸

The Tunisia airbridge is relevant because it diverted assets from Stalingrad. In November 1942 the Axis elected to garrison Tunisia after its defeat at Second Alamein and the seaborne invasion of Algeria (part of Operation TORCH). 320 Ju-52s were sent to the Mediterranean to help carry the reinforcements.¹⁷⁹ The Tunisia airlift was maintained at this peak level until the end of December 1942 when some transport aircraft were transferred to Stalingrad. During November and December 41,768 troops, 8,614 tons of equipment and 1,472 tons of fuel were delivered at a cost of 128 Ju-52s. By the end of January 1943 the Luftwaffe had lost 659 transport aircraft, 56% of its strength, in the Mediterranean theatre and at Stalingrad.¹⁸⁰ The

¹⁷³ Huschke, pp. 21; Morzik, pp. 172; Plocher, p. 86.

¹⁷⁴ Morzik, pp. 137-138; Plocher, p. 86 - writing in 1966 still considered it a success 'on the whole'.

¹⁷⁵ Morzik, p. 179.

¹⁷⁶ Morzik, pp. 142-143.

¹⁷⁷ Plocher, pp. 81 (for quotation), 100.

¹⁷⁸ Morzik, pp. 151, 153, 160-163, 176-179.

¹⁷⁹ Williamson Murray, [Professor Military Theory, US Marine Corps University] *Luftwaffe* (London: George Allen 1985) p. 149.

¹⁸⁰ Morzik pp. 57-60, 131-135; Murray, *Luftwaffe*, pp. 118, 149, 151-152.

Germans lacked the capability to supply Stalingrad and Tunisia concurrently and had to surrender both. In 1948-49 the Americans and the British had to redistribute their air delivery assets and there was pain worldwide. However, they did not face the same dilemma as the Germans because the Berlin Airlift ended before the Korean War started.¹⁸¹

On 22 November 1942 the C-in-C German Sixth Army, General Friedrich Paulus, radioed that Stalingrad was encircled and had six days worth of supplies. This emphasized how perilous the German lines of communication in southern Russia were in 1942¹⁸² despite one He-111 and nine Ju-52 groups of Luftflotte 4 having delivered about 42,000 tons of which between about 7,000 and 9000 tons were for the German Army and the rest for the Luftwaffe. Additionally 27,000 troops were carried in and 51,000 casualties had been evacuated.¹⁸³ The first supplies were airlifted into Stalingrad on 23 November 1942. However, such was the state of the Luftflotte 4 transport aircraft after a summer's constant campaigning, as well as their other commitments, that on 25 November only 30 aircraft out of a force of 295 were committed to the Sixth Army¹⁸⁴.

At the start of the siege the Sixth Army senior officers sought 750 tons per day but reduced the figure subsequently to 500 tons which matched the Sixth Army Quartermaster's late November 1942 survival figure.¹⁸⁵ In the same timeframe, Generaloberst Kurt Zeidler (Chief of Staff of the Army General Staff - OKH) claimed to have told Hitler, during a dispute with Göring, that 300 tons per day was the absolute minimum but 500 tons per flying day was needed because of the oncoming

¹⁸¹ AP3235, p. 552; Thomas E. Eichhorst, Lt Col, 'Military Airlift: Turbulence, Evolution, and Promise for the Future', (Airpower Research Institute Air University, Research Fellow, 1991) p. 16; TNA, AIR 20/6892, DDTO/DDASTO paper 17 January 1949.

¹⁸² Joel S. A. Hayward, *Stopped at Stalingrad: The Luftwaffe and Hitler's Defeat in the East 1942-1943* (Lawrence KS: University Press of Kansas, 1998) p. 247; Morzik, p. 182. German supply problems on the Eastern Front were not peculiar to the Stalingrad advance in 1942, Martin Van Creveld, *Supplying War: Logistics from Wallenstein to Patton*, 2nd edn. (New York: Cambridge University Press, 2004) Chap. 5.

¹⁸³ Plocher, p. 233.

¹⁸⁴ Hayward, *Stopped*, pp. 233, 247.

¹⁸⁵ Hayward, *Stopped*, pp. 236, 243; Joel S. A. Hayward, 'Stalingrad: An Examination of Hitler's Decision to Airlift.', *Airpower Journal*, Spring 1997, Vol. 11, No. 1.

winter weather. Generaloberst Wolfram Richthofen (Commander Luftflotte 4) recorded being required to fly in a 'not possible' 300 tons per day.¹⁸⁶ On 19 December 1942 Generalleutnant Martin Fiebig (Commander VIII Fliegerkorps) was tasked to airlift four thousand tons of fuel and 1,800 tons of rations in addition to the daily target, in case the Sixth Army had to undertake an orderly retreat after the LVIIth Panzer Corps established contact.¹⁸⁷ Finally on 25 December 1942, the daily target was set at 550 tons a day 'to maintain combat readiness'.¹⁸⁸ A lack of reality appears to have existed outside of Fiebig, Richthofen and Zeitler.¹⁸⁹

Morzik stated that reliable figures were not available for the tonnage airlifted but then gave a precise figure of 6,591 tons.¹⁹⁰ He identified the activity peak as occurring between 12 to 21 December 1942 when the average daily total was 137 tons; see Table 3.5.¹⁹¹ Huschke listed Morzik's figure (but calling it 'tonnes') as well as 8,251 tonnes which is ascribed to Generalfeldmarschal Erhard Milch (Deputy C-in-C Luftwaffe)'s post-operation report.¹⁹² Hayward cites both 8,350.7 tons (117.6 tons per day) and a lower figure from Generalmajor Wolfgang Pickert (Commander 9th Flak Division and although an artillery specialist, the senior Luftwaffe officer in the Stalingrad Pocket¹⁹³) of 103 tons per day.¹⁹⁴ Personnel were flown in and out and between 24,910 and 30,000 sick and wounded evacuated.¹⁹⁵ There are no figures

¹⁸⁶ Hayward, *Stopped*, pp. 236, 241, 243.

¹⁸⁷ Hayward, *Stopped*, p. 270.

¹⁸⁸ Hayward, *Stopped*, p. 275.

¹⁸⁹ Hayward, *Stopped*, p. 236-237, 241-243; Huschke, p. 41.

¹⁹⁰ Morzik, p. 194.

¹⁹¹ Morzik, p. 193. Morzik would have been reporting other sources as he was not in a position to know the figures day by day on a first hand basis. Nevertheless, Plocher wrote that Morzik was 'probably the best qualified man in Germany on the subject [of air transport] especially with respect to Stalingrad' - Plocher, p. 348.

¹⁹² Huschke, p. 41.

¹⁹³ Plocher, p. 314 recorded that Paulus placed Pickert in charge of all local air operations even though he was not competent in aviation matters and there were competent officers in the encirclement but of more junior rank.

¹⁹⁴ Hayward, *Stopped*, pp. 310, 375 footnote 124.

¹⁹⁵ Hayward, *Stopped*, pp. 287, 375 footnote 125; Morzik, p. 193.

available (if there ever were) about how much actually reached the Axis troops inside the Pocket.¹⁹⁶

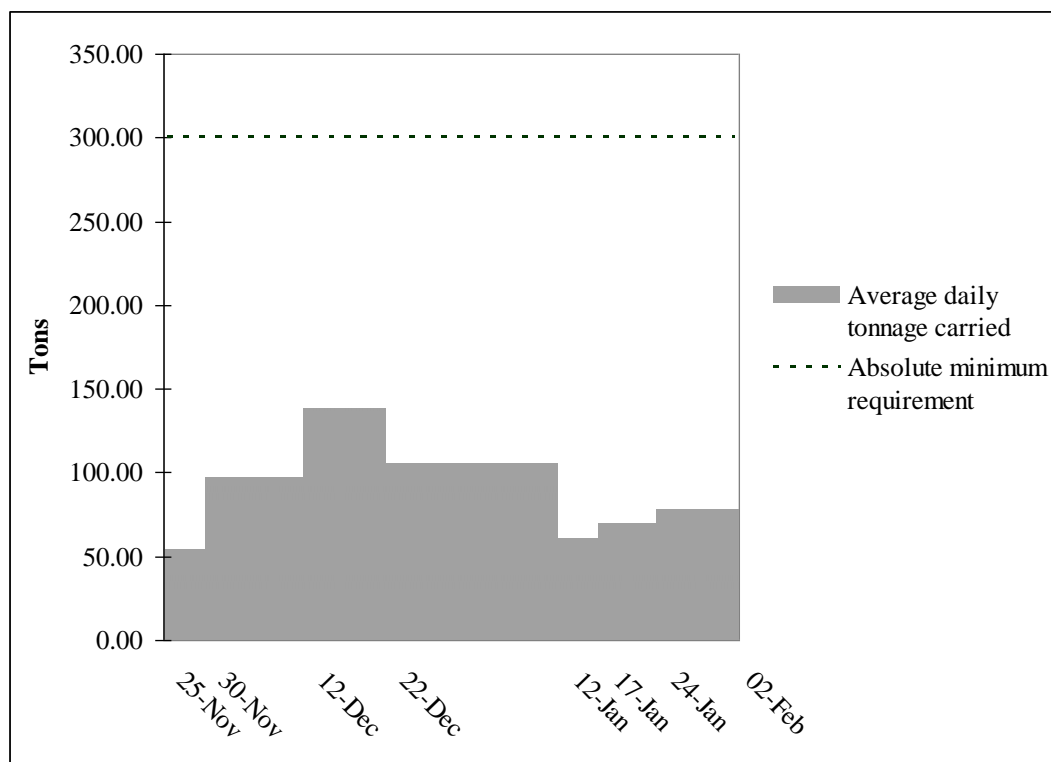


Table 3.5: Stalingrad Airlift - Average Tonnage Carried per Day - Morzik's Figures

The Stalingrad airlift failed because the Axis did not hold the airfields. Initially the aircraft flew mainly from the very congested, inadequate airfields at Tatsinskaya (Junkers Ju-52 and Ju-86 base) and Morozovskaya (Heinkel He-111 base).¹⁹⁷ After the former's capture by the Soviet army on 24 December 1942 and the latter's evacuation on 2 January 1943, they moved to even poorer airfields at Salsk and Novochoerkassk. After Salsk fell, the Ju-52s redeployed to the 'woefully inadequate' site at Zverevo on 15 January 1943.¹⁹⁸ Morozovskaya was 200 kilometres from the

¹⁹⁶ Morzik, p. 194.

¹⁹⁷ Morzik, pp. 198-199.

¹⁹⁸ Hayward, *Stopped*, pp. 252, 256, 271-272, 277-280, 282-283, 288-289, 306. The He-111 bombers other than those used as transports were withdrawn from Novochoerkassk to permanent airfields at Konstantinovka, Stalino and Voroshilovgrad. The four-engine long-range aircraft deployed on the airlift operated from Stalino + Zaporozhye - Hayward, *Stopped*, pp. 249, 307; Huschke, p. 32; Morzik, pp. 195-196.

Pocket; Novocherkassk 330; Salsk 350; Tatsinskaya 230 and Zverevo 400. Salsk and Zverevo were barely within Ju-52 operating range.¹⁹⁹

The landing grounds in the Pocket were primitive with runways and unloading areas of compacted snow. Pitomnik was the only one equipped to handle aircraft night and day.²⁰⁰ Basargino came within range of Soviet artillery early on and ceased to be used. Gumrak was put into use after the loss of Pitomnik on 16 January 1943 but it was unsuitable to handle cargo aircraft on a regular basis. It was captured on 23 January as was the last extreme possibility at Stalingradskiye a few hours later.²⁰¹ Thereafter air drops continued until the Northern Pocket surrendered on 2 February 1943.²⁰²

Even if the airfields had been held, Morzik argued that the airlift would have failed because the Luftwaffe was unable to generate enough airlift capacity on a day by day basis. Morzik explained that to deliver 750 tons per day (the Sixth Army senior officers' original figure) would have required 375 two ton Ju-52 deliveries per day. Based on one round trip per day and an operational availability of 30% to 35%, he concluded that 1,050 Ju-52s would have been needed.²⁰³ The Luftwaffe had about 750 Ju-52s of which about 250 (Murray cited 320²⁰⁴) were reinforcing and supplying North Africa where 200 were still employed at Christmas 1942.²⁰⁵

There are issues with the parameters Morzik used. At 30% 1,250 aircraft would have been needed and at 35% 1,071. He planned on two tons per delivery making no allowances for aircraft bulking out before they exceeded their permissible payload or being dispatched part full. His availability rate was 30% to 35% whilst over time the Ju-52 figure fell to as low as 25% owing to the usage of aircraft in adverse weather

¹⁹⁹ Hayward, *Stopped*, pp. 282-283; Huschke, p. 32; Morzik, p. 191.

²⁰⁰ Morzik, pp. 196-197.

²⁰¹ Hayward, *Stopped*, pp. 284, 288, 291-292, 302; Huschke, pp. 32-34.

²⁰² Hayward, *Stopped*, pp. 309-310.

²⁰³ Morzik, p. 185. Anon, *The History of Flight* <www.century-of-flight.net> [accessed 27 April 2011] gave the Ju-52 payload available for cargo as 4,067lbs.

²⁰⁴ Murray, *Luftwaffe*, p. 149.

²⁰⁵ Hayward, *Stopped*, pp. 244-245; Morzik, pp. 131-134, 185.

and the shortages of spares, ground equipment, ground crews, and hangars.²⁰⁶ (Murray recorded that on 18 January 1943 less than 7% of available Ju-52s and 33% of He-111s were serviceable.²⁰⁷)

Morzik made no allowance for aircraft losses which reached 488 (that is seven a day with 54.5% of losses being Ju-52s and 33.8% He-111s).²⁰⁸ There were few replacements for lost aircraft and by the 29 January 1943 Luftflotte 4 had only 363 Ju-52s and He-111s at the consignor airfields.²⁰⁹ Morzik included no contingency for bad weather yet there were only 27 days of totally unhindered flying weather in the Pocket. Moreover, when the weather was favourable there it might not have been at the consigning airfields.²¹⁰ Hayward cited Fiebig for a period before 6 January 1943: 'around thirty percent [of our planes] fail to get through'²¹¹ whilst as recorded above, Zeitler's contingency was 66%. On the other hand, Morzik's calculation used 750 tons for his daily target not the lower ones of 550, 500 or 300 tons.

Morzik assumed one delivery per serviceable aircraft per day. He recorded that aircraft flew at night and in low visibility²¹² but this would have only been possible when the weather permitted, the aircraft was equipped for night flying, and there was an aircrew capable of doing so.²¹³ However, if those constraints had not been present was more than one flight per day possible anyway? After the capture of Tatsinskaya at Christmas 1942, the Ju-52s had to fly from Salsk.²¹⁴ The total flight time Salsk-Pitomnik-Salsk would have been about 220 minutes without allowing for stacking; forming formations, and detours to avoid known anti-aircraft batteries and to

²⁰⁶ Morzik, pp. 185-201.

²⁰⁷ Williamson Murray, *Strategy for Defeat: the Luftwaffe, 1933-1945* (Washington DC: Brassey's, 1996, reprint of Air University Press, 1983) p. 154.

²⁰⁸ Morzik, p. 195; Plocher, p. 354.

²⁰⁹ Plocher, pp. 320-321.

²¹⁰ Huschke, pp. 37-38; Morzik, p. 194.

²¹¹ Hayward, *Stopped*, pp. 251-253, 283 (for quotation).

²¹² Morzik, pp. 189-190.

²¹³ Hayward, *Stopped*, p. 253; Morzik, pp. 187-188.

²¹⁴ Hayward, *Stopped*, pp. 274, 278.

'confuse' Soviet fighters.²¹⁵ Initially aircraft were being turned around in the Pocket in two hours but as the siege continued the figure dropped to four.²¹⁶ Thus by early January 1943 the time from initial take-off to return landing would have been at least seven hours 40 minutes. At the base airfields aircraft would have had to taxi; be refuelled; the passengers and wounded unloaded, and new cargo loaded. Before the next sortie, some form of pre-flight inspection would have had to be undertaken and probably the aircraft would have had to be dug out from the snow and de-iced.²¹⁷

In theory at least two deliveries per day should have been possible, if the airfields and strips in the Pocket could have handled them night and day. Hypothetically to haul 750 tons per day the Stalingrad airlift should have needed a daily minimum of between 765 and 1,071 Ju-52s (based on 750 tons at two tons per Ju-52 delivery, two deliveries per day, Fiebig's weather contingency of 30% not getting through, and between 25% and 35% serviceability). Seven serviceable aircraft would additionally have been needed daily to allow for losses.

Owing to the deficiency in dedicated Luftwaffe transports, aircraft were commandeered from other duties such as long range reconnaissance, bombing and training, and from organizations outside the Luftwaffe, such as Lufthansa. Many had to be re-rolled to become temporary transports and aircraft from out of theatre had to be modified to operate in the extreme cold. This took time but by early December Luftflotte 4 had about 500 transports of all kinds. However, what was needed were tactical robust transport aircraft able to operate from rough landing strips; the Ju-52s and He-111s (which were limited in types of cargo it could carry) met these criteria, the Junkers Ju-86 trainers and four engine long range bombers and reconnaissance aircraft did not, and some aircraft types had to be withdrawn.²¹⁸ Moreover, the presence of a number of different types and in the case of the Ju-52, models, often in

²¹⁵ The National Museum of the USAF, 'Ju 52', *Fact Sheets* (Wright-Patterson AFB) <www.nationalmuseum.af.mil/factsheets> [accessed 10 July 2012]; Anon, *Janes' Fighting Aircraft of World War II* (London: Random House Studio, 2001) pp. 170-171.

²¹⁶ Hayward, *Stopped*, p. 258.

²¹⁷ Morzik, pp. 190, 192, 195-196, 198-199.

²¹⁸ Hayward, *Stopped*, pp. 248-249; Huschke, pp. 26-27, 36; Morzik, pp. 186-187. Huschke p. 27 indicated without citing a source or a date that the total may have reached 750 eventually, on paper, and 'for a time'.

small numbers, would have been detrimental to the daily generation of aircraft, planning and cargo preparation. When set against the reality of the miscellany, the above hypothetical calculations are optimistic.

The calculations also assume the normal approach to achieving the largest daily tonnage possible from an aircraft fleet. That is that each one is launched as soon as it is ready. At Stalingrad the Luftwaffe had to employ a surge method (rather than continuous flow) to take advantage of breaks in the weather and the availability of its limited fighter cover.²¹⁹ The deficiencies in the support infrastructure meant it could not generate enough sorties to use the surge method effectively and so would have been unable to achieve the hypothetical maximum.²²⁰

In April 1949, the last full month of the Berlin blockade, CALTF delivered on average 7,845 short tons daily in 862 deliveries from eight airfields to three in Berlin using about 370 aircraft per day from airfields with good facilities. It used tried procedures for ground handling and air traffic control. The fleet was supported by excellent (for the time) avionics, and well-trained and experienced personnel.²²¹ The Luftwaffe at Stalingrad had nothing like this and it seems improbable that the Pocket could have handled an average of 375 deliveries per day, especially as the period between sunrise and sunset was in the order of 8 hours 20 minutes and the aircraft would have arrived in groups rather than a continuous stream.²²²

The Soviet victory at Stalingrad was widely published across the Allies (and was admitted to by the Germans). What was released was subject to wartime

²¹⁹ Willard B. Akins, 'The Ghosts of Stalingrad' (master's thesis, U.S. Army Command and General Staff College, Fort Leavenworth, 2004) p. 44 said that by the end of December 1942 because of the lack of fighters available, the transports had to fly in large groups to achieve fighter escort and that as the more forward airfields were captured the fighters lacked the range to provide cover throughout the sortie.

²²⁰ John Steven Brunhaver, 'Lifeline from the Sky: The Doctrinal Implications of Supplying an Enclave from the Air' (School of Advanced Airpower Studies, Maxwell AFB, Completion of Graduation Requirements, 1996) pp. 16-18.

²²¹ AP3257, pp. 14-70, Apps: G, R.

²²² (Stavanger: Time and Date AS) <www.timeanddate.com/worldclock/sunrise.html> [accessed 13 February 2012]. The period between sunrise and sunset is 67% longer at Berlin in mid-April than at Stalingrad at the start of January.

propaganda, misconception, and in broad summary.²²³ The detail, however, could not have been known by those about to mount the Berlin Airlift. During the Berlin Airlift Major General William H. Tunner, CG CALTF, explored with Hans-Detlef Herhudt von Rohden (Oberst, Chief of Staff Luftflotte 4, 24 August 1942–23 February 1943²²⁴) why Stalingrad failed. Tunner concluded that the airlift was 'hampered by' too many aircraft, many of which were not winterized; poorly kitted air and ground crews; too few airfields; insufficient aircraft maintenance, and lack of know-how 'rather than Russian action'.²²⁵

Some of Tunner's conclusions matched with Morzik's reasons for the Stalingrad airlift's failure. However, unlike Tunner, Morzik also pointed to the loss of the airfields and to the inability to protect them and the transports from Soviet air attack.²²⁶ The Berlin Airlift would have failed too if the Soviets had occupied the Berlin airfields. Tunner believed that too many aircraft were involved and one way to reduce the numbers would have been to improve the turn round times. In Berlin aircraft were turned around in less than 40 minutes²²⁷, not the two to four hours that applied in the Pocket. However, even if better turn rounds had been achieved by the Germans, uncertainty remains about how many landings per day the Pocket could have handled. The real need was fewer landings with far larger payloads; a robust tactical cargo carrier with at least a 20 ton payload and a roll-on roll-off capability but such aircraft did not enter service until the 1950s.²²⁸

²²³ Beevor, *Stalingrad*, Chaps. 23, 25.

²²⁴ Von Rohden was a Luftwaffe staff officer and neither an engineer nor an air transport specialist, who as an ex-generalmajor helped recruit German mechanics for USAF squadrons in CALTF - Huschke, pp. 24, 194.

²²⁵ Tunner, pp. 183-184.

²²⁶ Morzik, p. 200.

²²⁷ Tunner, p. 171.

²²⁸ Beverley Association, 'Beverley Details' <www.beverley-association.org.uk/html/history/history.htm> [accessed 7 July 2013]; The National Museum of the USAF, 'Lockheed AC-130A Hercules', *Fact Sheets* <www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=3357> [accessed 7 March 2013]; USAF, C-130, *Fact Sheets*, <www.af.mil/AboutUs/FactSheets/Display/tabid/224/Article/104517/c-130-hercules.aspx>, dated September 2003>.

CONCLUSION

The Hump was a proving ground that made it possible for the Americans to appoint a Berlin Airlift commander with a management team that had operated the airbridge successfully. However, it took time to set up the highly effective task force and put in place the essential infrastructure to support it. America had the robust and effective Douglas Skymaster aircraft - used during the Hump - and by recalling reservists was able to achieve high utilization.

In contrast, the airbridge experience gained in a remote part of the world by a few squadrons with much USAAF assistance was lost post-war in the much reduced RAF which was commanded mainly by those with wartime bomber and tactical air force experience. Unlike the Americans, the RAF did not deploy an experienced task force commander. Owing to Britain's financial state, it lacked appropriate aircraft in adequate numbers whilst political decisions not to recall reservists en masse led to insufficient aircrews and maintenance staff. AATO was still in existence in 1948 and its South East Asia wartime commander was appointed Berlin Airlift CAATO with Anglo-American responsibilities in the Northern Zone of Germany.

Tunner wrote that the Luftwaffe's failure at Stalingrad coloured Soviet thinking about the Berlin Airlift, but is this why the Soviets 'didn't take ours seriously until it was too late'.²²⁹ What the Soviet leadership took from its wartime experiences and those of its allies and enemies is conjecture. They may have known the effort that had been needed to support Leningrad during its siege, that the Leningrad and 'August Storm' airbridges had not met their targets, and that the Luftwaffe failed to deliver a few hundred tons daily at Stalingrad. Probably the most significant point would have been that no previous airlift had delivered the tonnages that CALTF would need to haul to supply western Berlin. Even at its peak, the largest of the wartime airbridges, the Hump, averaged only 41% of the target set for western Berlin during the winter of 1948-1949.²³⁰ Moreover, Pavlov had described the Leningrad airlift as costly. Was expense another reason why the Airlift was unexpected?

²²⁹ Tunner, p. 184.

²³⁰ *AP3257*, p. 301; The Hump averaged 2292 short tons per day in July 1945 - see Table 3.1 above.

There were those in the upper echelons of the USAF and in Britain who also considered that the Airlift would fail and as Chapters 5 and 6 will show, they were very nearly right during the winter of 1948-1949. As Dr Arthur Charlesby wrote: 'The unusually mild weather, which permitted Berliners to pass the winter without excessive hardship and with only a minute contribution of space-heating coal. Had it been necessary to give each family the modest amount of four cwt of coal for the entire winter, as was hoped, the supply position would have become quite impossible.'²³¹ Threaded through much of the Berlin Blockade research material was a proposition that the Soviets did not wish to start a war and so were unwilling to interfere seriously with the Berlin Airlift.²³² A perception that the Airlift would fail anyway would have been reassuring.

²³¹ TNA: AIR 55/98, E.81 'Draft for 46 Group Report'; AIR 55/100, Charlesby, 'RB/4/4, The Supply of Berlin during the Winter of 1948/1949', *Research Branch BAFO Planning Operation "Plainfare"*, E.24 subpara. 3a, undated. Dr Arthur Charlesby, Air Ministry Science 2, was seconded to HQ BAFO as Chief Research Officer during the Airlift and reported to ACAS(Ops) and AOC-in-C BAFO as appropriate.

²³² Davison, pp. 199, 276.

CHAPTER 4:

BERLIN BLOCKADE - THE INTERNATIONAL, GERMAN AND DIPLOMATIC DIMENSIONS

Chapter 4 continues the thread started in Chapter 2 by identifying the international, German and diplomatic aspects of the Blockade whilst the corresponding chronology of significant events is continued in Appendix 8. The population of western Berlin was recorded at 2,118,631 and before the Blockade 12,000 tons per day were delivered there by road, rail and barge.¹ Faced with a situation where the Soviets appeared to hold all the trump cards the Americans and British considered options such as evacuating 1.5 million western Berliners by air; sending through armed convoys, or supply by air.² Whilst dehydration of food and reduction in packaging would reduce the tonnage to be hauled³, when the USAF Air Staff reported that 'the air operation is doomed to failure'⁴ it would have seemed a reasonable appraisal although the variant used by Deputy Under Secretary Foreign Office, Sir Ivone Kirkpatrick, is less acceptable nowadays: 'the two million inhabitants of our zones of

¹ Control Commission for Germany (British Element), *Notes on the Blockade of Berlin 1948: from a British viewpoint in Berlin* (Berlin: Printing and Service Control Commission for Germany (BE), 1949) p. 17; HQ BAFO, *AP3257 A Report on Operation PLAINFARE (The Berlin Airlift) 25th June 1948 - 6th October 1949* (Bielefeld: Control Commission, 1950) p. 279; TNA, AIR 24/1807, Introductory Section, January 1949. C. W. P. Coan, 'The Berlin Airlift 24 June 1948-30 September 1949', *The British Army Review*, No. 120, December 1998 and Magistrat of Berlin, Oscar Scholz, ed., 'Food for Berlin', *Airlift Berlin – A report with pictures* (Berlin: Berlin-Grunewald, 1949) p. 93, recorded two million fed. Coan gave 13,500 tons as did Dudley Barker, *Berlin Airlift: An Account of the British Contribution* (London: HMSO, 1949) p. 8.

² Peter Hennessy, *Never Again: Britain 1945-1951* (London: Penguin, 2006) p. 351; TNA: AIR 8/2607, Extract 87th COS Meeting 28 June 1948, 96th COS Meeting 9 July 1948, COS 97th Meeting 12 July 1948, 100th COS Meeting 15 July 1948, Basic 125 FRANCOMB 15 July 1948, Lt Gen Sir Leslie Hollis - Chief Staff Officer to Minister of Defence - 20-July 1948 with Annex, Extract 102nd COS Meeting 10 July 1948, Commonwealth Relations Office telegraph 22 July 1948, JP(48)86 (Final) 26 July 1948, ACAS(P) minute 27 July 1948 and Annex, Extract 106th COS Meeting 28 July 1948, Strang (FO) 30 July 1948, Extract 116th COS Meeting 20 August 1948; FO 371/70496, Es:35-37 subfolder 'Ernst Reuter on the situation in Berlin'; FO 1012/565, Evacuation of Children 1948.

³ *AP3257*, pp. 69, 304, Dehydrating potatoes saved 780 tons a day, boning meat saved 25%, and tare weight for food was reduced to approximately 6%.

⁴ Daniel F. Harrington, USAF Historian, 'The Berlin Blockade Revisited', *The International History Review*, Vol. VI, No. 1, February 1984, p. 99, ascribed to Cornelius V. Whitney, the Assistant Secretary of the (US) Air Force, reporting to the [US] National Security Council.

Berlin could not be supplied by air, it was important to do all we could.....to enable us to feed the key Germans i.e. newspaper proprietors and politicians'⁵. Smith cited Under Secretary of State Robert Lovett as using the descriptors: 'unsatisfactory' and 'temporary expedient', and that Forrestal 'brooded darkly about a deadline in mid-October when winter weather would ground the airlift'.⁶ Nevertheless, in spite of their reservations the Americans and the British opted to supply their garrisons and the civilians in western Berlin by air until such time as the blockade could be resolved by negotiation which introduced diplomatic and international dimensions to the Berlin Blockade as well as the Airlift ones.⁷

The American and French ambassadors in Moscow and Frank Roberts (Bevin's private secretary who represented the British as the ambassador was absent sick) held preliminary meetings with Valerian Zorin (Deputy Soviet Foreign Minister) and Vyacheslav Molotov (Soviet Foreign Minister) on the 30 and 31 July 1948 respectively prior to meetings with Molotov and Stalin on 2 August to explore ways to lift the Blockade. Meetings continued until an agreement was reached on 27 August 1948. This was published on the 31st and indicated that the recently imposed restrictions on communications, transport and commerce would be lifted and the east mark would be Berlin's sole currency. The German Bank of Emission of the Eastern Zone would regulate currency in Berlin and a financial commission of representatives of the four military governors would be set up 'to control the practical implementation of the financial arrangements ... involved in the introduction and continued circulation of a single currency in Berlin'. The Military Governors were directed to identify the detail to implement the agreement and to set a timetable. They were to report to their Governments by 7 September 1948.⁸ The directive also

⁵ TNA, AIR 8/2607, Extract 87th COS Meeting 28 June 1948.

⁶ Jean Edward Smith, *Lucius D. Clay: An American Life* (New York: Holt and Co., 1990) p. 513.

⁷ Hennessy, *Never Again*, pp. 351, 356; TNA, AIR 8/2607, Commonwealth Relations Office telegraph 22 July 1948.

⁸ Alan Bullock, *Ernest Bevin - Foreign Secretary 1945-1951* (Oxford: Oxford University Press, 1985) pp. 590-594, 635; Walter Phillips Davison, *The Berlin Blockade: A Study in Cold War Politics* (New York: Arno Press, 1980) pp. 158-162 (for quotation p. 161), 190-193; Frank Roberts, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989) pp. 38-43; Avi Shlaim, *The United States and the Berlin Blockade, 1948-1949 a Study in Crisis Decision-* Footnote continues on next page.

required that a satisfactory basis for trade between Berlin and the West be worked out. The Military Governors met but detailed negotiations quickly broke down over the supervision of the Bank of Emission and the east mark; Soviet demands for restrictions on civil air travel, and the control of trade with Berlin.⁹

The published text of the Moscow Agreement was ambiguous and made no mention of various verbal assurances given by Stalin or his emphasized objection to the development of a separate West Germany.¹⁰ Whilst what was achieved was probably the best that might have been expected, the alternative of reaching no agreement rather than a bad one might have been a better option.¹¹ Davison applauded the Soviet handling of the negotiations and argued that their initial objective was to cause the Western Powers to alter their intentions for western Germany and to allow the Soviet Union greater involvement there. When that failed they attempted to gain control of all of Berlin.¹² The attacks by communist-led mobs against the Magistrat and City Assembly; on-going propaganda directed at the Germans and the international community; the continued blockade, and the July 1948 offer to supply food to all Berliners may be seen as parallel activities aimed at achieving control of the city. The food offer would have placed all Berliners under Soviet administrative control and, noticeably, it did not include coal or electricity.¹³ Davison argued that the Soviets moved to seeking a situation where either the Western Powers stayed in Berlin on sufferance or withdrew.¹⁴ Narinskii recorded a Soviet expectation that the Western Powers could be persuaded to quit Berlin albeit not necessarily immediately.¹⁵ The phrase 'We lost our diplomatic shirt in Moscow' - attributed to

making (Berkeley CA: University of California Press, 1983) pp. 312-326; Daniel Yergin, *Shattered Peace: the origins of the cold war and the national security state* (London: Deutsch, 1978) pp. 384-386.

⁹ Bullock, p. 635; Davison, pp. 183-184, 239-241; Shlaim, pp. 326-346.

¹⁰ Davison, pp. 159-162.

¹¹ Davison, p. 194; Michail M. Narinskii, 'The Soviet Union and the Berlin Crisis', in *The Soviet Union and Europe in the Cold War, 1943-53*, ed. by Francesca Gori and Silvio Pons (Basingstoke: Palgrave, 1996) pp. 69-70.

¹² Davison, pp. 191-192; TNA, AIR 8/2607, Strang (FO) 30 July 1948; Yergin, pp. 384-386.

¹³ Davison, pp. 107, 119, 162-182, 192, 244, 377-378.

¹⁴ Davison, pp. 191-192.

¹⁵ Narinskii, pp. 65-66, 69.

an unidentified member of the American Military Government - seems aptly to sum up the Moscow negotiations from an American, British and French viewpoint.¹⁶

[Sir] Frank Roberts gave a slightly different assessment of the Moscow meetings in 1989. Technically the negotiations addressed the introduction of the west mark into Berlin and Soviet withdrawal of their 'measures which amounted collectively to a blockade'. However, during the meetings with Stalin it became clear that his real concern was developments in western Germany. At the second one he said: 'But don't forget, I'm not making this a condition, but I do attach great importance to your either stopping, as I would like it, or anyway slowing down the building-up of the West German administration'. Roberts contended that Stalin did not believe that he could drive the Western Powers from Berlin.¹⁷ This assessment is relevant when the low level of Soviet interference with the Airlift is considered in Chapter 5.

Between the 14 and 25 September 1948, after the breakdown of the Military Governors' discussions, notes were exchanged unproductively between the Western Powers and the Soviets.¹⁸ On the 29th the American, British and French Governments asked the Secretary General of the UN to have the Security Council consider the 'threat to peace' that had arisen in Berlin. The Council agreed to put it on its agenda on 5 October in spite of strong Soviet protestations that the matter should be referred to the Council of Ministers instead. The Soviets then refused to take part.¹⁹ On 22 October the six 'neutral members' put forward a resolution to end the blockade which the Soviets vetoed on the 25th.²⁰ The UN continued and on 30 October gained Soviet collaboration to participate with a committee of technical experts from the six neutrals to formulate the technical details needed for the east mark to become the sole Berlin currency.²¹

As the committee started work the formation of the 'Staatsoper' Magistrat on 30

¹⁶ Davison, p. 184.

¹⁷ Roberts, 'The Berlin Air Lift', pp. 42-43.

¹⁸ Davison, pp. 238-240.

¹⁹ Davison, pp. 241-243.

²⁰ Davison, p. 243.

²¹ Davison, p. 245.

November 1948 split local government in the City and changed the stance of the Western Powers.²² On 3 January 1949 the committee of neutral technical experts submitted its report to the four Powers. The USA submitted a counterproposal that placed control of the east mark in the western sectors solely in American, British and French hands. The Soviets rejected the counterproposal and accepted the committee's report only with major amendments, whilst the Western Powers rejected the report.²³ On 3 February 1949 the Americans indicated they were laying aside the Moscow Agreement (which in propaganda terms had been a millstone from the start). The Western Powers' position had become that the B-mark would circulate in the western sectors until a single city administration was restored.²⁴ On 11 February 1949 the committee of neutral technical experts informed the Security Council that further work to resolve the Berlin issue did not seem productive currently. The west mark finally replaced the B-mark on 20 March 1949.²⁵

On 31 January 1949 Stalin replied to questions submitted by American journalist J. Kingsbury-Smith stating his conditions for ending the blockade and making no reference to the currency issue.²⁶ Secretary of State Dean Acheson instructed Dr Phillip Jessup (US Deputy Representative to UN Security Council) to take soundings with Yacob Malik (Soviet Representative to UN Security Council).²⁷ This occurred on 15 February 1949 but it was not until 15 March that they met again when Malik confirmed that the omission was not accidental.²⁸ On the 21st Malik proposed linking a meeting of the Council of Foreign Ministers with the lifting of the blockade. Malik would not agree to include the British and the French in their discussions. Jessup therefore informed their UN representatives about what was taking place.²⁹ At the 5, 11 and 13 April meetings Malik manoeuvred to couple developments for a West Germany state and the Council of Ministers meeting but

²² Davison, pp. 246-7.

²³ Davison, pp. 248, 389.

²⁴ Davison, p. 248.

²⁵ Davison, pp. 248, 389.

²⁶ Ann and John Tusa, *The Berlin Airlift* (Staplehurst: Spellmount, 1998) pp. 328-329.

²⁷ Tusas, pp. 329-330.

²⁸ Tusas, pp. 331-332.

²⁹ Tusas, p. 333.

was firmly rebuffed; each would proceed at its own speed. Moreover, Jessup was unwilling to agree a date for the Council's meeting or discuss the agenda. (No doubt this firming of position by the Americans reflected stiffening injected by Bevin who had concerns about Soviet motives, particularly attempts to interfere with the creation of West Germany and NATO³⁰). At those meetings and ones on 27 and 29 April Malik still continued to baulk at expanding attendance at their discussions.³¹

Nevertheless, on 5 May 1949 all Four Powers issued the following official statement:

The Governments of France, the Union of Soviet Socialist Republics, the United Kingdom, and the United States have reached the following agreement:

1. All the restrictions imposed since March 1, 1948, by the Government of the Union of Soviet Socialist Republics on communications, transportation, and trade between Berlin and the Western zones of Germany and between the Eastern zone and the Western zones will be removed on May 12, 1949.
2. All the restrictions imposed since March 1, 1948, by the Governments of France, the United Kingdom, and the United States, or anyone of them, on communications, transportation, and trade between Berlin and the Eastern zone and between the Western and Eastern zones of Germany will also be removed on May 12, 1949.
3. Eleven days subsequent to the removal of the restrictions referred to in paragraphs one and two, namely, on May 23, 1949, a meeting of the Council of Foreign Ministers will be convened in Paris to consider questions relating to Germany and problems arising out of the situation in Berlin, including also the question of currency in Berlin.³²

The Americans and the British should have been able to start running down their Airlift operation after the Blockade was lifted on the 12 May 1949 but inevitably the transition from blockade to open access did not go smoothly. The Airlift had to continue to build up stocks and to counter continued Soviet restrictions and harassment of military and civil road, rail and waterway traffic, 'a state of semi-

³⁰ Bullock, pp. 690-691.

³¹ Tusas, pp. 352-353; USNA, Record Group 43, Records of International Conferences, Commissions, and Expositions 1825 - 1979, Foreign Ministers on Future of Germany: [ARC Identifiers 1358294 and 1358295] MLR Numbers A1 631 and A1 632, Boxes 303 and Box 304, Jessup-Malik Conversations, Summaries of the Conversations, and Jessup-Malik Agreement.

³² Davison, p. 271; USNA, Record Group 43, MLR Numbers A1 632, Box 304, Jessup-Malik Agreement.

blockade'.³³ On 22 May 1949 the problems with surface transport were made worse when the western sectors trades union led a strike of Berlin's railway workers with the objective of having wages being paid in full in west marks. (At the time the east mark was worth between a third and a fifth of a west mark). Resolving the strike was not helped by the Reichsbahn Directorate being controlled by the Soviet Military Administration and being willing only to negotiate with the communist-run union. The strike, which Bevin viewed as 'over-ambitious claims', adversely affected resupply; helped force the expensive Airlift to continue, and provided the Soviets with camouflage for its semi-blockade. After two ballots and pressure from the western sectors Magistrat and the western Commandants, a kind of normality returned to the railways at the start of July. Rundown of the Airlift started after the strike ended continuing between 12 July 1949 and 6 October 1949.³⁴ West Berlin would remain vulnerable to blockade, of course, until Germany was reunited and so the three Western Powers and the Federal Republic of Germany had to maintain contingency plans for further airlifts.³⁵

The American, British and French did not have the resources to stay in Berlin without the support of the western Berliners, even assuming that they had the political will to try. Tegel airfield was built during the Blockade using 17,000 labourers, over half of whom were women, and the 'stevedores' off-loading the aircraft were western Berliners.³⁶ Reuter said (in translation): 'People of this world ... look upon this city and see that you should not and cannot abandon this city and

³³ Tusas, pp. 355-360, 372, 378-379; USNA, Record Group 319, Army Staff, P&O Division Decimal File 1946-48, Box 36, Murphy Np1413 19 June 1949. Quotation ascribed by Daniel F. Harrington *Berlin on the Brink: The Blockade, The Airlift and the Early Cold War* (Lexington Ky: University of Kentucky, 2012) p. 287 to [James W.] Riddleberger.

³⁴ Harrington, *Berlin on the Brink*, pp. 288-289; Tusas, pp. 335, 361-5 (quotation p. 364), 372-374. End of Airlift: AP3257 pp. 149, 552; HQ USAFE, *Berlin Airlift: A USAFE Summary, 26 June 1948-30 September 1949* (HQ Ramstein AFB: USAFE reproduction Centre, undated, circa 1950) p. 189.

³⁵ Tusas, pp. 378-379; Examples in TNA: AIR 2/15258-15259, AIR 19/619, AIR 20/7148 and AIR 20/11405.

³⁶ Elizabeth S. Lay, Historical Division, Headquarters European Command, 'The Berlin Airlift: Part 1: 21 June-31 December 1948', *Occupation Forces in Europe Series 1948 -1949*, (Karlsruhe: 1952) p. 24; William H. Tunner, *Over the Hump* (Washington DC, US Government, 1985) pp. 211-212.

this people!'.³⁷ Davison suggested that 'Berliners support the Western powers; West Germans must support their fellow nationals in Berlin; therefore, West Germans should support the Western Powers'.³⁸ It was slightly more complicated than that. The stance that the western Berliners took and the commitment of the Americans and British to breaking the blockade persuaded sceptical German politicians to go on with the creation of a Federal Republic aligned to the Western Bloc within a divided Germany, developments which in turn helped to support morale in western and then West Berlin.³⁹

Opposition existed to Soviet domination before the blockade but Davison's 'The Man in the [western Berlin] street' was hesitant about openly causing offence.⁴⁰ In his research Davison used the 300 essays submitted to *Der Abend* in 1951 describing life during the blockade.⁴¹ Twenty five essayists attributed their anti-Soviet attitudes to incidents when Berlin was captured and 47 to experiences during the Blockade. Others cited occurrences in the Eastern Zone or general experiences with the Soviets.⁴² Davison also referred to a UNESCO sponsored poll of 644 western Berliners taken in August 1948 which found that at 79% the Russians were the least popular foreigners.⁴³

That the Berliners were prepared to oppose the Soviets⁴⁴ was, however, surprising given that the US Military Government's Opinion Survey Branch found only 45% of a sampled population in July 1948 believed that the Airlift would be adequate during

³⁷ Ernst Reuter, Speech 9 September 1948, *Berlin after 1945* <www.berlin.de/berlin-im-ueberblick/geschichte/1945.en.html> [accessed 9 April 2013].

³⁸ Davison, pp. 287-288.

³⁹ Davison, pp. 283-289; Giles MacDonogh, *After the Reich: from the liberation of Vienna to the Berlin airlift* (London: John Murray, 2007) p. 543; Tusas, pp. 378-379. The significance of maintaining morale in western Berlin was emphasized in TNA, T 236/ 1026, Es:125-130 'Command Section (Plans) CS(P)2 (Third Edition) Airlift Requirements 31 March 1950'.

⁴⁰ Davison, pp. 130-132.

⁴¹ Davison, pp. 132, 381-384.

⁴² Davison, p. 324.

⁴³ Davison, p. 326.

⁴⁴ Davison, pp. 323-326, 328-333.

the winter.⁴⁵ Moreover, those with 9 or more years education were more pessimistic than those with less (49% to 38%).⁴⁶ Sixty seven *Der Abend* competition essayists mentioned what their 'expectations during the first few days' had been.⁴⁷ Thirty two expected the Airlift to fail and only 11 thought it would succeed. Although opting for the Western Powers, the citizens were not naive and did not believe that the Airlift was mounted altruistically for their welfare, nor did it mean that there was no criticism of the occupation personnel, which was usually centred on the disparity between the conditions endured by each group during the Blockade.⁴⁸

From June until September 1948, the Airlift was intended to deliver supplies until normal surface communications were re-established. Cargoes were sufficient to satisfy a 'relatively low-level existence for a short time'. From October 1948 to the start of March 1949, it became the means to survive the winter 'without considerable hardship to the civilian population'. This period was especially challenging to both the Airlift and the western Berliners as insufficient stocks had been built up before the Blockade started. Thereafter, the Airlift supplied the population and built up stocks for the winter of 1949/50.⁴⁹ The long term plans recognized that the western Berliners could not be expected to accept 'the emergency levels' supplied to date and improvements were needed to the monotony of the rations and the provision of electricity, gas, transport and industrial raw materials.⁵⁰ In the event, the period from the lifting of the Blockade in May until the early October 1949 constituted a fourth phase.⁵¹

⁴⁵ Davison, p. 143.

⁴⁶ Davison, p. 143.

⁴⁷ Davison, p. 136.

⁴⁸ Davison, pp. 332-335.

⁴⁹ AM, 'Operation Plainfare', *RAF Air Clues*, Vol. 3, No. 12, August 1949, p. 16 [Charlesby was the source for the article]; TNA: AIR 55/98, Es:3-9 Charlesby September 1949; FO 371/70495, Es:49-50 Military Governor No.1162 24 June 1948 gave the stock position for the western Berliners as 27 days food and 6 weeks coal for power stations and gas production.

⁵⁰ *Air Clues*, August 1949, p. 16 (for quotation); TNA, AIR 2/10064, Es:275-280 Robertson to Bevin 18 March 1949 and 14 March 1949 Appreciation.

⁵¹ TNA, Air 55/98, Es:3-9 Charlesby September 1949. His 'run-down period' was 'May - September 1949'.

The effort committed by the Americans and the British and the Airlift's growing success increased the opposition of the western Berliners to the Soviets.⁵² In terms of "hearts and minds", however, one noticeable failing was that although the American and British Governments gradually became reconciled to paying most Airlift costs they neither discussed the subject with western Berlin's leaders nor informed them of the decision thus leaving them to worry about eventual payment.⁵³ The Magistrat and other German enterprises and organizations were especially sensitive about money as the Soviets had blocked their deposits in Stadtkontor (the city's communist-controlled central bank) on the 30 July 1948 and time would elapse before the majority of the funds were released, whilst unemployment in the western sectors increased outgoings and reduced income.⁵⁴

Chapter 3 showed that sieges resulted in reductions in rations and in the case of Leningrad - the only siege examined where data about the civilian population was recorded - that civilians suffered the most. Davison's *Der Abend* research identified 72 essayists who mentioned the lack of electricity and that mainly for heating; 69 the lack of fuel again mainly for heating, and 35 the lack of or the dullness of food.⁵⁵ Clearly from the Berliner's view point coal and food were the priority cargoes.⁵⁶ The Airlift hauled 1,586,529.9 short tons of coal between its start and the end of September 1949.⁵⁷ This, however, was insufficient to meet the various purposes for which it was used in the 1940s including heating, electricity generation and town gas production. Electricity and gas were used for cooking, lighting and heating; 90% of domestic cooking had been done by gas and it became rationed.⁵⁸

The Berliners suffered the shortfall as the essayists recorded.⁵⁹ They were living in

⁵² Davison, pp. 32-33, 130-131, 323-331, 376-378.

⁵³ Tusas, pp. 219, 285.

⁵⁴ Davison, pp. 176-177; Tusas, pp. 189-190, 218-219, 282, 300.

⁵⁵ Davison, pp. 312-313.

⁵⁶ Davison, p. 315.

⁵⁷ AP3257, p. 521.

⁵⁸ Control Commission, *Notes*, p. 22-23; Davison, p. 315; TNA: AIR 2/10063, PLAINFARE Policy I, Robertson to FO (German Section) 13 December 1948.

⁵⁹ Davison, pp. 313-316; Tusas, p. 235.

crowded domestic accommodation, often war-damaged with little repair.⁶⁰ During the winter of 1948-49 only 12.5 kg of coal were allocated to each household and a small wood ration (mainly newly felled). Even with what could be scavenged in this 4th winter of post war deprivation, acquired from the Eastern Zone or bought in the black-market, most western Berliner's domestic accommodation was unheated.⁶¹ Indeed as Chapters 5 and 6 reveal, had the Berlin winter of 1948-1949 not been exceptionally mild the Airlift could well have failed through lack of coal for domestic heating.⁶²

The Blockade was not just a physical embargo on movement. On 24 June electrical power supplied from the Soviet Sector was affected and next day the supply of brown coal to the western sectors ceased. Eastern Zone supplied food (including babies' milk) was distributed only in the Soviet Sector.⁶³ On the 25 June there was a Soviet inspired rumour that the water system would fail. Fortunately this was quietened before excessive demand filling baths and other containers meant that it did. Stone mentioned that turning off the water supply was an option open to the Soviets that they chose not to adopt whilst a 1950 Western report suggested this might have been possible.⁶⁴

The problem with the supply of electricity lay not only with insufficient coal and liquid fuel (which was burnt in increasing quantities during the blockade⁶⁵) but in the availability of power stations. The Berlin West power station in the British sector had supplied a quarter of the city's electricity but had been destroyed by Soviet pillaging before the Americans and the British had been allowed in to the City.⁶⁶ The failure to achieve a quadripartite agreement to rebuild it or for the British to do so unilaterally before the blockade meant that western Berlin had only eight small 'obsolete' power stations and had to rely on supplies from the Eastern Zone which, with few exceptions,

⁶⁰ MacDonogh, p. 536 - 40% of accommodation destroyed but population had declined by 25%.

⁶¹ Davison, pp. 314-315; Tusas, pp. 244-245.

⁶² TNA: AIR 55/98-AIR 55/102, Research Branch BAFO papers.

⁶³ Bob Clarke, *10 Tons for Tempelhof: The Berlin Airlift* (Stroud: Tempus, 2007) p. 59; Davison, pp. 98-99.

⁶⁴ Davison, p. 99; Norman Stone, *The Atlantic and its Enemies: A History of the Cold War* (London: Penguin, 2011) p. 66; TNA, AIR 20/11405, attachment to Butler Bowden 25 May 1950, p. 10.

⁶⁵ Barker, pp. 10, 30, 37-38.

⁶⁶ AP3257, pp. 3, 69; Barker, pp. 7-8.

ceased during the Blockade.⁶⁷ Essential electricity supplies were augmented to a limited degree by small oil burning generators. The RAF flew in over 200 but most of these would have been for the use of the occupying powers.⁶⁸

Mention is made of inadequacies but this should be measured against the shortage of food across the whole of Germany that was described in Chapter 2. The rations at the start of the blockade were those inherited from earlier Kommandatura agreements and applied across the city; see Table 2.1 above. Thereafter those in the Soviet Sector differed from the other parts of the city. Table 4.1 displays the new ones that were introduced for the western Berliners on 1 November 1948 and for comparison that pertaining in the Soviet Sector at that time.⁶⁹ BAFO statistics record 485,501 short tons of food were carried by the Airlift between June 1948 and the end of May 1949.⁷⁰

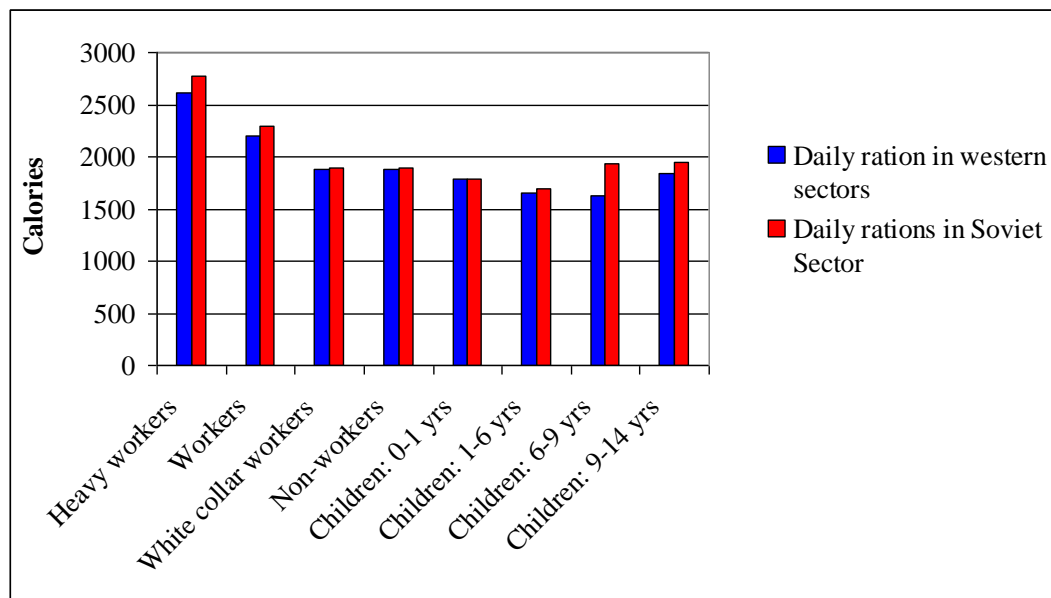


Table 4.1: Daily Food Ration from 1 November 1948

⁶⁷ Barker, pp. 10, 38; TNA, AIR 25/1273, No. 46 Gp. ORB Appendices, App. 86, 17 April 1949; Tusas, pp. 104-5, 141, 145. There were examples of sharing power supplies for mutual benefit. The S-bahn was kept running by Soviet electricity - Tusas, p. 193. The Soviet sector supplied electricity to RAF Gatow whilst the British sector supplied the Soviet airfield at Staaken (Dalgow) and the Radio Berlin building - Barker, p. 55.

⁶⁸ Barker, pp. 37-38.

⁶⁹ Anon, 'A special study of Operation "Vittles": the story of the Berlin Airlift', *Aviation Operations Magazine*, Vol.11, No. 5 (Conover-Mast Publications, April 1949) p. 14; Control Commission, *Notes*, pp. 19-20; Davison, pp. 142-3.

⁷⁰ AP3257, p. 521.

In the western sectors, blood donors, the chronically ill, diabetics, nursing mothers, and the elderly received supplementary rations.⁷¹ Vitamin C tablets had to be issued as the supply of vitamin-rich fresh vegetables was controlled throughout the Airlift and quotas were small, whilst much of the wheat came from Canada and lacked sufficient vitamins.⁷² Nourishment was imperative to the western Berliners whilst tonnage was to the Airlift. Table 4.2 indicates what was needed daily to satisfy the ration in November 1948.⁷³

<u>Product</u>	<u>Short tons</u>	<u>Product</u>	<u>Short tons</u>	<u>Product</u>	<u>Short tons</u>	
Flour and Wheat	646	Meat and Fish	109	Coffee	11	
Potatoes	180	Sugar	85	Cheese	10	
Vegetables	144	Fats	64	Whole dried milk	5	
Cereals	125	Skimmed dried	38			
Salt	19	milk				Yeast
TOTAL	1,439 short tons					

Table 4.2: Tons of Food needed daily by western Berlin in November 1948

Appendix 1, describing Leningrad, showed the gap that could appear between the official ration and what was actually available. Simon in 'The Berliners' Daily Grind' wrote that that even 'the basic foodstuffs were often in short supply' and the quotas given in Tables 2.1 and 4.1 represented the maximum daily allowances but did not guarantee what was available.⁷⁴ Arnold-Forster - a journalist in blockaded Berlin and writing in the 1970s - placed great emphasis on the supply side of the rationing system working 'very well' and without the 'despair and insecurity' of systems that

⁷¹ Mark Arnold-Forster, *The Siege of Berlin* (London: Collins, 1979) p. 82.

⁷² TNA, T 236/1026, E.66 FO (German Section) No. 141 Basic 10 January 1949; Tusas, pp. 239, 241.

⁷³ Anon, 'A special study of Operation "Vittles"', pp. 13-14 'Daily Food for Berlin'.

⁷⁴ Horst Simon, 'The Berliners' Daily Grind', *60th Anniversary Of The Berlin Airlift: The First Battle Of The Cold War May 1948 – June 1949* (Berlin: The Cold War Museum – Berlin Chapter, 2007) <www.coldwar.org/BerlinChapter> [accessed 1 February 2011]. 'The Berliners' Daily Grind' was written by an author whose credence cannot be established.

failed to deliver.⁷⁵ In addition to the formal ration allowances, small aid packages, such as those from the Cooperative for American Remittances to Europe (CARE), were distributed in limited quantities being hauled into the City by air.⁷⁶ For those seeking additional foods and who had something to trade, there was either the black market or trips on packed trains outside Berlin - part of the porous aspect of the blockade - with the risk of confiscation by Soviet or eastern German officials. An estimated 500,000 tons was acquired from the east during the Blockade, part of which would have been food but such food was not distributed equitably. The black markets in Berlin and western Germany increased the theft of goods from the Airlift stores and during transportation.⁷⁷

Food was dull and monotonous with the content determined by factors such as what was available on the world market - hence the absence of fats in the ration - or in military stores - the source of POM⁷⁸; the absence of refrigeration resulted in processed meat and much powdered egg; the need to minimise weight resulted, for example, in dehydrated vegetables and powdered milk; the limited fuel available for preparation in Berlin prevented nourishing tasty dishes such as pea soups, and the necessity to avoid returning containers affected the kinds of fish that could be brought in.⁷⁹ There were, however, positives too. Weight considerations meant that bread was baked locally (although wheat bread rather than the Berliners' preference,

⁷⁵ Arnold-Forster, p. 82.

⁷⁶ 'GRF', 'Candy From Heaven', insert to 'Berlin 1948-1948 Edition', in *Armed Forces Journal International*, ed. by John Roos, (McLean VA: May 1998) pp. 22-23; For example: Roger G. Miller, *To Save a City: The Berlin Airlift, 1948-1949* (College Station, TX: Texas A&M University Press, 2000) p. 77; John Provan and R.E.G. Davies, *Berlin Airlift: The Effort and the Aircraft* (McLean VA: Paladwr Press, 1998) p. 60; Tusas, p. 269.

⁷⁷ *Berlin Airlift: A USAFE Summary*, p. 165; Davison, pp. 196-8, 314; Elizabeth S. Lay, Historical Division, Headquarters European Command, 'The Berlin Airlift: Part 2: 1 January-30 September 1949', *Occupation Forces in Europe Series 1948 -1949*, (Karlsruhe: 1952) pp. 27-28, 50-51, 155; Miller, *To Save a City* (Texas A&M) pp. 52-54 (pp. 53-54 for 500,000 ton figure); USNA, Record Group 319, Army Staff, Plans and Operations Division, Decimal File 1946-1948, Box 118, Military Governor for Germany (US) 'Is Berlin Blockaded?' 23 October 1948 provided a comprehensive description to show the porous nature of the Blockade up to that point.

⁷⁸ 'POM' was one of the more popular dehydrated foods - Davison, p. 324.

⁷⁹ AP3257, p. 304; Arnold-Forster, p. 82; Davison, pp. 313-314; Simon, 'The Berliners' Daily Grind'; Tusas, *The Berlin Airlift*, pp. 239-242.

rye) and cheese and jam were introduced into the ration.⁸⁰

In spite of the negative aspects of Airlift rations, the response to the 19 July 1948 food offer by the Council of Ministers of the USSR to all Berliners was a dismal failure. This was probably because when the details were announced on 25th it involved registering in the Soviet Sector and the western Berliners were well aware of the real conditions in the east.⁸¹ The contemporaneous *Notes on the Blockade of Berlin* stated that 2,032,631 western Berliners drew rations in the western sectors and 86,000 in the Soviet Sector.⁸² The *Notes* analysed the latter figure and speculated that 11,000 of these were individuals who lived on the border of a western sector where the Soviets had arbitrarily undertaken to supply rations and a further 15,000 lived in the west but worked in the east and so it was a matter of convenience to continue to shop there. Others lived in a western sector but continued to deal with the near-by shops they had traditionally used which since the war were in the east.⁸³ Finally, there was the question of money which was not directly discussed in the *Notes* analysis. Owing to the rate of exchange (3.2 to 1 by the end of August 1948) it would have been financially attractive for those whose income was in east marks to buy in the Soviet Sector.⁸⁴

Food was not the only commodity the western Berliners needed. The October 1948 column of Table 4.3 shows their element of the newly set daily Airlift target of 5,620 short tons.⁸⁵ The May 1949 column is the forecasted requirement for western Berliners based on CALTF's expectation that on average across the month a total of 7,370 short tons per day would be available to airlift.⁸⁶ Charlesby's average daily

⁸⁰ Control Commission, *Notes*, pp. 19-20; Davison, pp. 313-314; Tusas, pp. 239-242. Barker, p. 10 recorded that in 'airspace' terms real coffee was 'cheaper' than the fuel to manufacture the ersatz variety.

⁸¹ Davison, pp. 165-166; Tusas, p. 192.

⁸² Control Commission, *Notes*, p. 17. Davison, p. 167 suggested 86,000 may have been a maximum figure and that by the year's end Magistrat figures indicated 85,000 albeit this was a growth from the 19,000 cited in the *Tagesspiegel* as registered in the east by 4 August 1948.

⁸³ Davison, p. 167; Control Commission, *Notes*, p. 17.

⁸⁴ Davison, pp. 166, 317-318.

⁸⁵ AP3257, p. 301.

⁸⁶ AP3257, p. 65.

figures for December 1948 through February 1949 were slightly larger totalling 5,179 short tons as against 4827 tons in Table 4.3. The difference was almost entirely coal. Even then, Charlesby found that the average daily shortfall during the period was 16% which had to be met from the stocks built up prior to the Blockade.⁸⁷ His analysis is examined further in Chapter 6 when addressing how close the Airlift came to not succeeding during the winter of 1948-1949.

	<u>20 October 1948</u>	<u>May 1949</u>
Food	1435	1800
Coal	3084	4006
Commerce, industrial and medical supplies	257	280
Newsprint	35	38
Liquid fuel	16	440
Total in short tons	4827	6564

Table 4.3: Daily Airlift Allocation to western Berliners

When the German requirements are compared with the needs of the Americans, British and French, the full magnitude of supplying the western Berliners becomes apparent. In May 1949, for example, 89% of the daily requirement was for the western Berliners.⁸⁸ It was not charity; it was the price that had to be paid to retain the status quo in Berlin.

To conclude, the blockade was lifted by negotiation. It was achieved without the Western powers having to quit Berlin, modify their currency reform or their intentions for western Germany to form a separate independent nation within the Western Bloc. The resolve of the western Berliners, the Americans and British in countering the blockade by the Airlift gave momentum to both the creation of the Federal Republic and NATO. However, negotiation took far longer than the Western powers had hoped for originally; was confused at times, and whilst delivering a bridgehead in East Germany, the issue of secure access had not been resolved. The western Berliners' opposition to the Soviets and their commitment to the West was

⁸⁷ AP3257, p. 367.

⁸⁸ AP3257, p. 65.

dependant on the Airlift's success and the staunchness of the Western powers to Soviet aggression. The need to retain western Berliner support has to be recognized when deciding if the Americans could have replaced the British.

CHAPTER 5:

BERLIN AIRLIFT - KEY SUCCESS FACTORS

The Berlin Airlift presented a challenge that was far beyond any previous airbridge. A CALTF post-operational Report described its mission as: 'To supply the island of [western] Berlin with the necessities of life by air'¹; Barker wrote that 'It is almost incredibly difficult to direct a stream of aircraft into and away from a single airfield, with a frequency nearly equal to that of Underground trains using one platform of Piccadilly station in the rush hour'², and *Air Clues* published that 'One of the main objects of the Operation was to achieve maximum utilization of aircraft: the intensity of flying was far higher than in any other unit of the Air Force. It was essential to account for every minute of aircraft time.'³

As recorded in Chapter 3, Tunner concluded that Stalingrad was 'hampered by' too many aircraft; too few airfields; insufficient aircraft maintenance, and a lack of know-how. Morzik's reasons for the failure additionally included the loss of the airfields and the inability to protect the air transports from Soviet attack. One way to reduce aircraft numbers would have been by using homogeneous robust cargo carriers hauling large loads, whilst another would have involved reducing aircraft turn round times. High utilization meant having sufficient aircrews to allow every serviceable, loaded aircraft to takeoff immediately it became available. In Russia, as in northern Europe, it also involved maintaining high sortie rates in adverse weather. Fast turn rounds depended on efficient ground operations. Lack of know-how linked with another theme present throughout Chapter 3, an efficient, experienced chain of command. None of these factors were individually the recipe for success; a balanced integration was required which again emphasizes know-how and command.

¹ HQ BAFO, *AP3257 A Report on Operation PLAINFARE (The Berlin Airlift) 25th June 1948 - 6th October 1949* (Bielefeld: Control Commission, 1950) p. 281. A variant: 'To supply the island of Berlin through three air corridors with the necessities of life' - AFHRA, IRISNUM 241477, 'Briefing for Mr Symington and party December 24 1948'.

² Dudley Barker, *Berlin Airlift: An Account of the British Contribution* (London: HMSO, 1949) p. 6.

³ AM, *RAF Air Clues*, Vol. 3, No. 12, August 1949, p. 23.

Chapter 5 records what was found during the research into the Airlift's command structure, aircraft generation, airfields, freight handling and Soviet harassment. Aircraft generation identifies the types, the numbers deployed, their distribution, and relevant performance considerations. It considers maintenance and manning levels, both on the ground and in the air. Chapter 5's emphasis is on the RAF and the British Civil Lift. The aim is to understand how these success factors were implemented during the Airlift and how they affected it as a precursor to the analyses in Chapter 6. Without an understanding of how the Airlift operated, the implications of scenario changes such as the relocation of American aircraft cannot be established and the potential amendments to the Airlift system and its infrastructure cannot be identified and examined. The same success factors are used to detect differences between the Americans and the British thereby determining if the latter's lower performance arose from reasons beyond Barker's aircraft numbers and sizes.

AIRLIFT COMMAND

The Berlin Airlift's Combined Airlift Task Force Headquarters [HQ CALTF], and thus its constituents 1st [US] Airlift Task Force [1st ALTF] and Number 46 Group RAF [No. 46 Gp.], did not operate under the command of the national transport specialists (the American Military Air Transport Service and the British Transport Command⁴) but reported to the local organizations, Headquarters United States Air

⁴ Transport Command was formed on 25 March 1943 from Ferry Command which itself was created on 20 July 1941. Its role post war had been scheduled passenger and priority freight movements; communications flights; preplanned movement of units; training for Airborne assault units, and aircraft ferrying - M. B. Barrass, 'RAF Home Commands formed between 1939 - 1957', *Air of Authority - A History of RAF Organisation* <www.rafweb.org/Cmd_H3A.htm> [accessed 12 June 2012]; TNA: AIR 24/2046-2050, T C ORBs and Appendices 1948-49. At the time Transport Command was the most junior RAF Command - 'Orion (1949)', 'The Berlin Airlift: Operation PLAINFARE', *Journal of the Royal United Service Institution*, 94: 573, February 1949, pp. 82-86.

Military Air Transport Service (MATS) was even newer having been formed from the USAF Air Transport Command and the Naval Air Transport Service on 1 June 1948. At the time of the Berlin Airlift MATS did not include Troop Carrier units. Its origins too were in ferrying, Air Corps Ferrying Command created on 29 May 1941 - AFHRA, 'Military Airlift Command', *Fact Sheet* <www.afhra.af.mil/factsheets/factsheet.asp?id=12476>, posted '5/21/2008'; Herman S. Wolk, USAF Historian, *Planning and Organizing the Postwar Air Force 1943-1947* (Washington DC: US Government, 1984) pp. vii, 31, 70, 179, 220-221, 231.

Forces in Europe [HQ USAFE] and Headquarters British Air Forces of Occupation (Germany) [HQ BAFO]. These had evolved from wartime tactical air forces. They were involved mainly with occupation duties and lacked core competence in air transport operations.⁵ The local higher formations "owned" the infrastructure from which the Airlift operated and had extant channels of communication with the local army Commands and the civilian occupation organizations that were essential to the wider operation.⁶

The Americans appointed USAF Major General William Tunner, who had airbridge experience, as its operational commander but his and MATS [US Department of Defense Military Air Transport Service]'s expertise were constrained by the reporting chain through HQ USAFE - described by Tunner as 'an unsympathetic command'. Tunner arrived with his selected team of ex-Hump specialists.⁷ The RAF appointed Air Commodore John Merer who was Air Officer Commanding of one of the involved Transport Command groups. He had held that post for nine months, but otherwise had no experience of commanding air transport.⁸ Figure 5.1 displays the British Airlift command, control and coordination structure whilst Figure 5.2 identifies the personalities and their experience thereby emphasizing the general lack of air supply experience in the upper echelons of the RAF.⁹

⁵ AP3257, App. B; Roger G. Miller, *To Save a City: The Berlin Airlift, 1948-1949* (College Station, TX: Texas A&M University Press, 2000) pp. 66 citing Gp Capt K. B. Cross, 96-98. TNA, AIR 24/1821, Charlewood 1 April 1949 revealed that aside from the Berlin Airlift fleets, HQ BAFO comprised 10 squadrons of twin and single engined aircraft fighter and fighter bombers (128 aircraft) at two stations plus a few Auster spotters.

⁶ AP3257; HQ USAFE, *Berlin Airlift: A USAFE Summary, 26 June 1948-30 September 1949* (HQ Ramstein AFB: USAFE reproduction Centre, undated, circa 1950); Elizabeth S. Lay, Historical Division, Headquarters European Command, 'The Berlin Airlift: Part 1: 21 June-31 December 1948' and 'The Berlin Airlift: Part 2: 1 January-30 September 1949', *Occupation Forces in Europe Series 1948-1949*, (Karlsruhe: 1952); TNA: AIR 20/7148, AM Conference 25 October 1948 including Appendix A; AIR 20/7824, Waite 11 March 1949 - reorganization in Berlin; AIR 38/310, Merer 22 October 1948.

⁷ Anon, 'Hump and Lift - twin Triumphs of Air Transport', *The Task Force Times*, 26 March 1949; Miller, *To Save a City* (Texas A&M) pp. 89-90, 95-99; William H. Tunner, *Over the Hump* (Washington DC, US Government, 1985) pp. 162-165, 197 (latter for quotation).

⁸ M. B. Barrass, 'Air Vice Marshal J W F Merer (07250)', *Air of Authority - A History of RAF Organisation* <www.rafweb.org/Biographies/Merer.htm> [accessed 2 February 2012]. Further details about Merer are given below after Figure 5.2.

⁹ Compiled from: AM, *The Air Force List*, various, 1947-1950 (London: HMSO, 1947-1950); Anon, various 'Service Aviation: Royal Air Force and Naval Air Arm News and Footnote continues on next page.

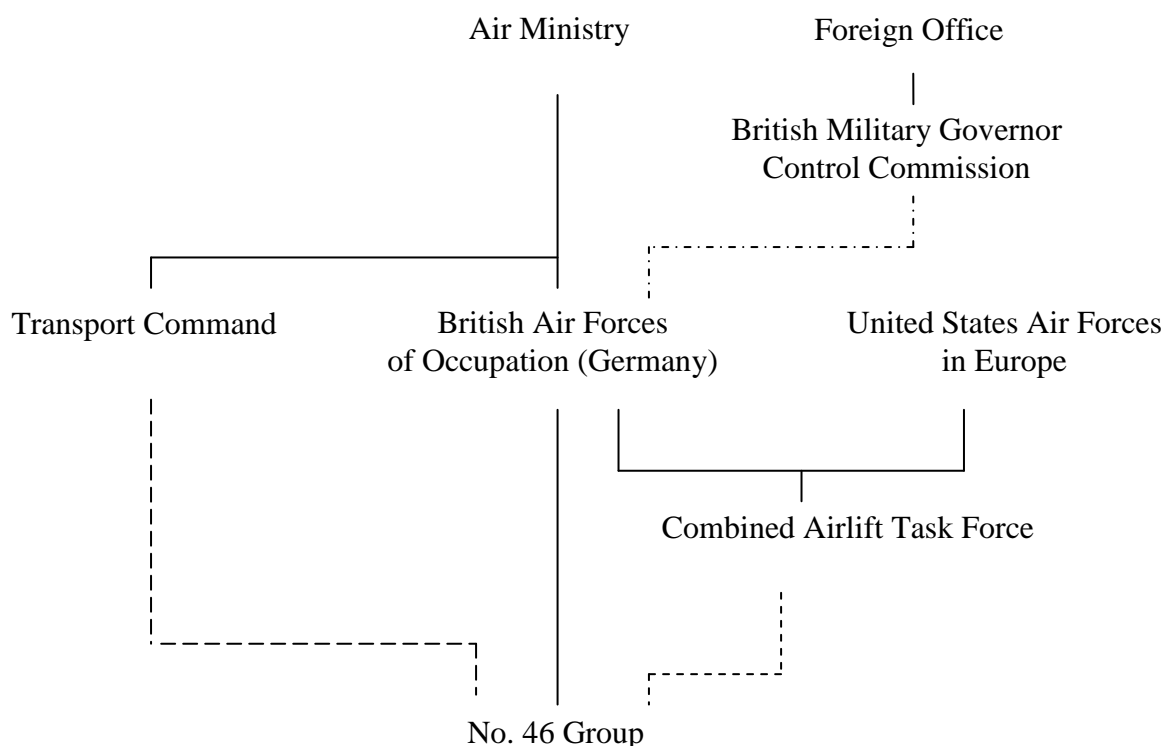


Figure 5.1: British Command, Control and Coordination

Announcements', *Flight*, (Flightglobal archives) <www.flightglobal.com/pdfarchive/view/.....> [accessed various]; AP3257, pp. 7-11, 66-67, 153, App. B; M. B. Barrass, *Air of Authority - A History of RAF Organisation* <www.rafweb.org/Cdrs_Alpin_ind.htm and www.rafweb.org/Biographies/.....> [accessed 2010-2012]; Liddell Hart Centre for Military Archives, King's College London *Survey of the Papers of Senior UK Defence Personnel, 1900-1975*; Hilary St George Saunders, 'Volume III: The Fight is Won', *Royal Air Force 1939-1945* (London: HMSO, 1954) p. 343; TNA: AIR 2/10064, AM AX2431 1 April 1949; AIR 24/1806, 'Brief Resumé of BAFO Command', October 1948; Herbert Weaver, 'Chapter. 14 The Pattern of India-Burma Operations, 1943', in *The Army Air Forces in World War II Volume IV: The Pacific: Guadalcanal to Saipan August 1942 to July 1944: 4. China-Burma-India*, ed. by Wesley Frank and James Lea Cate (Chicago: University of Chicago Press, 1950) p. 461.

Air Ministry

Chief of the Air Staff [CAS]: MRAF Lord Tedder – wartime experience tactical air power; deputy to Eisenhower

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Vice Chief of the Air Staff [VCAS]: 1st Air Mshl Sir James Robb - wartime experience in bomber, reconnaissance, tactical air power; 2nd Air Mshl Sir Arthur Sanders – wartime experience primarily HQ Bomber Command, ex-AOC-in-C BAFO (in its occupation role and early Airlift involvement)

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Deputy Chief of the Air Staff [DCAS]: Air Mshl Sir Hugh Walmsley – wartime experience almost entirely in Bomber Command. Post-war: Air Officer, Transport Command, South East Asia for two months in 1946 before becoming Air Officer Administration Air Headquarters India

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|

ACAS(Ops): 1st AVM Hardman; 2nd AVM Guest – wartime experience of both, command of air transport South East Asia

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Deputy Director of Air Support and Transport Operations [DDASTO]: Gp Capt Rainsford – wartime experience bombers in North Africa and North West Europe; post war: Headquarters Transport Command and as a civil servant in the Ministry of Civil Aviation

British Air Forces of Occupation

Air Officer Commanding in Chief, :1st Air Mshl Sir Arthur Sanders
– see VCAS above; 2nd Air Mshl Thomas Williams - for experience
see below

|

Air Officer Commanding No. 46 Gp. RAF and Deputy
Commander CALTF: Air Cdre John Merer - for experience
see below

Transport Command

AOC-in-C Transport Command from 1947 Air Mshl Sir Brian
Baker - wartime experience mainly in Coastal Command not
air transport

Figure 5.2: RAF Personalities involved in Command, Control and Coordination

Williams's wartime experience was initially in Bomber Command followed by 2-star appointments between January 1942 and July 1944 in South East Asia. On 1 August 1944 he became ACAS(Ops). For much of his time in India resources were limited and the aircraft types that were available were operationally obsolete in Europe. He would have returned to the UK with broad if limited experience in most facets of air power including tactical air support. He would have had a general appreciation of the potential and challenges of air supply but had not commanded major air supply operations unlike Tunner, Hardman and Brigadier General William Old (CG Troop Carrier Command). He had worked with and for Americans and had been assistant commander of Eastern Air Command.¹⁰ In a locally produced 'Personalities'

¹⁰ Compiled from: AHB, *The Campaigns in the Far East: Volume V: Air Supply Operations in Burma 1942-1945* (first draft May 1949) Chaps. 1-2, and Chap. 5; Liddell Hart Centre for Military Archives, King's College London, *Survey of the Papers of Senior UK Defence Personnel, 1900-1975*; Saunders, *The Fight is Won*, Chaps. XIV-XV; TNA: AIR 2/5665, Air Mshl Sir John Baldwin, Bengal Command 15 November - 17 December 1943 p. 3; AIR 23/2077, Organization Chart of Eastern Air Command Enclosure 1 to General Order 1; AIR 23/4683, Despatch on Air Operations in Bengal Command covering the period January 1st to June 20th, 1943 by AVM Williams August 1943; AIR23/4684, Despatch on Air Operations in Bengal Command covering the period June 21st to November 15th 1943 by
Footnote continues on next page.

pamphlet he was described as the 'ambassador of the RAF/USAAF integration of this theater'.¹¹

Post-war he remained as ACAS(Ops) before becoming Commandant of the RAF Staff College, Bracknell in 1947 and AOC-in-C BAFO in October 1948.¹² BAFO's regular operational role was tactical air support. Britain was the smaller partner in the Anglo-American Berlin Airlift coalition. His varied experience made Williams a balanced choice as the new AOC-in-C BAFO. The Air Ministry progressively sidelined HQ Transport Command during Operation PLAINFARE until on 5 May 1949 DCAS wrote to the AOC-in-C that 'In conclusion I am to reiterate that the primary task of your Command is to provide the C.-in-C., B.A.F.O., with sufficient number of adequately trained crews and aircraft in the agreed proportion to deliver a minimum daily average of one thousand tons into Berlin'.¹³ By then Williams had gained seven months experience commanding BAFO.

Merer's wartime experience was at HQ RAF Middle East between 1939-1942; Deputy Head of Plans British Joint Staff Mission USA 1942-1944, then Officer Commanding RAF Scampton, and finally AOC, No 56 Base, RAF Syerston. Between 1945 and 1947 he was Director of Allied Co-operation and Foreign Liaison at the Air Ministry before becoming AOC No. 46 Group, a Transport Command Group, in 1947. Group Captain Noel Hyde, a Transport Command station commander, was the Officer Commanding Transport Force before Merer took command (and subsequently became senior permanent RAF representative at HQ CALTF). His wartime experience was in Bomber Command (before becoming a prisoner of war in 1941).¹⁴

AVM Williams December 1943; AIR 24/178, Eastern Air Command Personalities: First Anniversary.

¹¹ TNA, AIR 24/178, Eastern Air Command Personalities: First Anniversary.

¹² Liddell Hart Centre for Military Archives, King's College London, *Survey of the Papers of Senior UK Defence Personnel, 1900-1975*.

¹³ TNA, AIR 2/10064, E.28 ACAS (Ops) CMS.1066/48 1 December 1949 and E.193 Walmsley 5 May 1949 (for quotation).

¹⁴ AP3257, pp. 128-129, 273; M. B. Barrass, *Air of Authority - A History of RAF Organisation* <www.rafweb.org/Biographies/..... for 'Hyde' and 'Merer'> [accessed on Footnote continues on next page.

The prevalence of senior RAF officers with a bomber background is not considered to be a reflection of "pecking orders" within air forces¹⁵ but arose because of the large number of Air Officers that Bomber Command produced for whom appointments were needed post-war. Nevertheless, the RAF failed to apply one of the fundamental success factors which had become apparent in the Second World War precedents, namely that command of the operation should be allocated to a small specialist unit which reported to a single higher authority that had air transport competence. That it deployed Headquarters No. 46 Group to Germany helped but, as Chapter 3 showed, RAF post war air transport was routine and significantly different from intensive operations such as the Hump, Imphal and the subsequent liberation of Burma.

The relationship between CALTF and No. 46 Gp. was one of coordination of traffic arrangements rather than true command.¹⁶ HQ CALTF was not truly a joint headquarters as its American element also commanded 1st ALTF. HQ No. 46 Group was short of staff officers to fill its own posts without meeting Tunner's requirements at a headquarters based at Wiesbaden Air Force Base [AFB] in the Southern Zone.¹⁷ (Canon was adamant that relocation of HQ CALTF to the Northern Zone was unacceptable¹⁸). No. 46 Group HQ and the prime real estate for the airlift - as is examined below and in Chapter 6 - lay in the Northern [British] Zone of Occupation.¹⁹ At air task force level, BAFO recognized in AP3257 that from the British viewpoint HQ CALTF had not developed as had been anticipated and that it was inefficient.²⁰ The complexity of the wider "direction" of the Airlift is

multiple occasions 2012-2013]; Liddell Hart Centre for Military Archives, King's College London, *Survey of the Papers of Senior UK Defence Personnel, 1900-1975*; Tunner, p. 210.

¹⁵ Laura L. Lenderman, 'The Rise of Air Mobility and Its Generals', *Drew Paper No. 1* (Air Force Research Institute, Air University Maxwell AFB, 2008) p. 68.

¹⁶ AP3257, pp. 9-13, 153-4, 284.

¹⁷ AP3257, p. 10; TNA: AIR 8/2612, correspondence on 'integration' 17 to 24 September 1948; AIR 24/1835, Operational Instruction 19/48 'Operation PLAINFARE' 1 October 1948, Tunner 28 October 1948; AIR 55/218, Es:185-188 Merer 13 January 1949, Es:189-190 unsigned HQ BAFO Air Staff note 13 January 1949; AIR 55/220 Es:93-95 - relevant pages in Baker and Williams Joint Staff paper 22 December 1949.

¹⁸ Tunner, p. 209.

¹⁹ AP3257, pp. 10, 16-17.

²⁰ AP3257, p. 10.

pertinent throughout Chapters 5 and 6, although often in a conjectural way, for example when considering relocation of the American 1st ALTF to the Northern Zone and whether an American commanding general, wedged under HQ USAFE and HQ BAFO, could have overcome British objections in key areas such as the ratios of aircrew and maintenance staff to aircraft?

Given the many, multinational civilian and military organizations involved in the wider Airlift it is difficult to see how it could have functioned other than by cooperation and negotiation. Those involved in the Airlift included American, British, French and German politicians and in Britain and the USA, civil servants and military officers in ministries and air force commands. In western Germany there were the military governors, civil servants of the occupying authorities, commanders and their subordinates in the American, British and French armies, BAFO and USAFE. In western Berlin the commandants and their staffs and American, British, French and indigenous civilian authorities participated. Finally across the world there were the civilian contractors. Figures 5.1 and 5.4 show a small part of this. *AP3257*'s diagram 'The Life Line to Berlin' dealt solely with the 'Organization of Freight Supply'. Nevertheless, it identified 12 organizations located in Germany in addition to the air forces.²¹

AIRCRAFT GENERATION

The RAF was the major British carrier as Table 5.1 reveals, whilst the Civil Lift came to specialize in the bulk transport of liquid fuels as Table 5.2 emphasizes.²²

²¹ *AP3257*, pp. 66-68.

²² *AP3257*, pp. 519, 521.

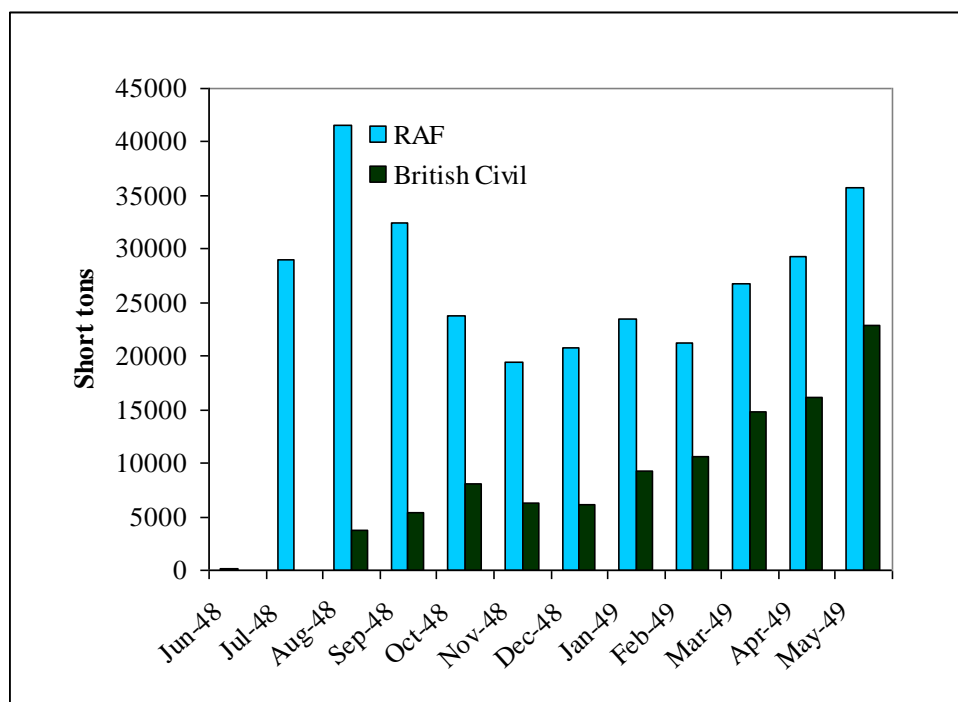


Table 5.1: Division of the British airlift

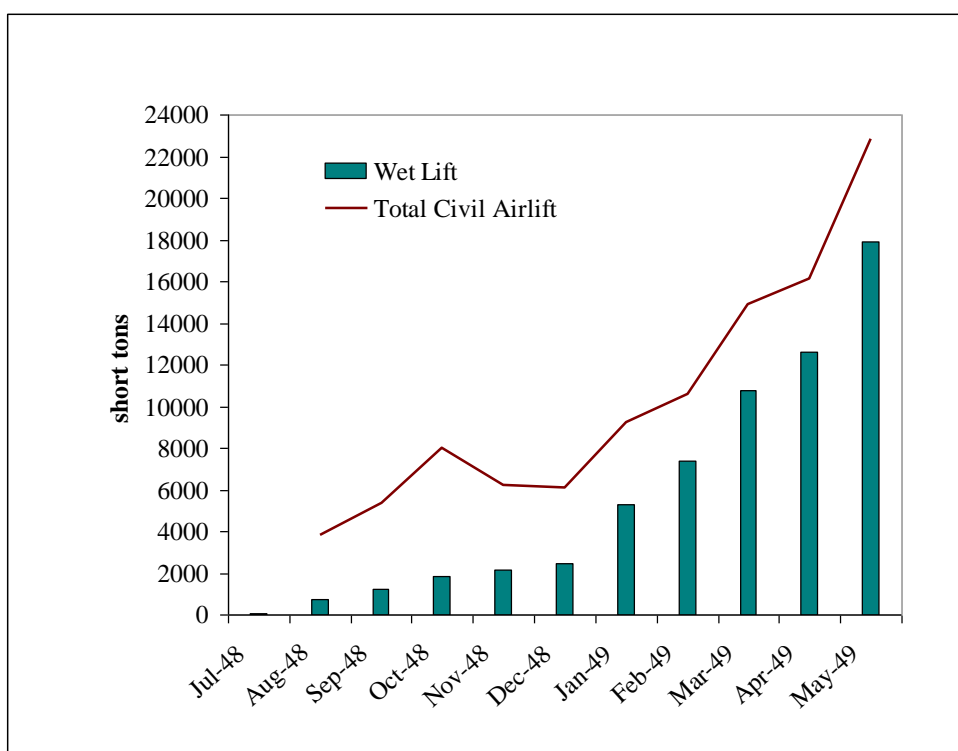


Table 5.2: Significance of Liquid Fuels within the Civil Airlift

The RAF airlift's average composition in Germany in 1949 is summarized in Table 5.3. The Avro York and Handley Page Hastings numbers remained more or less constant during the period whilst the Douglas Dakota population fell from 59.8 in

January to 45.5 in May 1949.²³

<u>Type</u>	<u>Average Daily Strength between 1 January and 31 May 1949</u>	<u>Planning Tonnage in Short Tons</u>
York	38.9	8½,
Dakota	50.8	3½
Hastings	13.8	9½

Table 5.3: RAF Airlift Force Strength 1949

By the start of its rundown, the Civil Lift had been refined to six different aircraft types operating from RAF Schleswigland, RAF Wunstorf and Fuhlsbuttel civil airport. All were four-engine but only the Handley Page Halifaxes and Avro Lancastrians (conversions of Second World War bombers) were present in double digit numbers and only the Avro Tudor (a "failed" civil airliner²⁴) could carry 10 short tons²⁵. The American 1st ALTF was assigned 225 USAF and United States Navy [USN] four-engine Douglas Skymasters able to carry between 9.5 and 10 short tons.²⁶ Numbers are indicative because strengths varied from day to day and the number serviceable was usually less than the on-station/base strength, for example the USAF had a daily average of 191.1 aircraft assigned to its operating groups

²³ TNA: AIR 2/10064, E.329 Airlift Progress Report undated circa 15 February 1949 - increase in Hastings payload to permit it to haul the same as the Skymaster; AIR 55/100, E.30 Charlesby 22 March 1949, nine short tons 'are now under consideration for the York'; AIR 55/110, BAFO compiled 'RAF Form No. STATS 120 (provisional)'.

²⁴ 'The Tudor was built like a battleship. It was noisy, I had no confidence in its engines and its systems were hopeless. The Americans were fifty years ahead of us in systems engineering. All the hydraulics, the air conditioning equipment and the recircling fans were crammed together underneath the floor without any thought. There were fuel-burning heaters that would never work; we had the floorboards up in flight again and again.' - Gordon Store, BSAA chief pilot and manager of operations, quoted in Andrew (Jackman) Brookes, *Disaster in the Air* (London: Ian Allan, 1992) p. 40.

²⁵ 11 short tons as freighters - AP3257, p. 284.

²⁶ AP3257, Part 4 and p. 284. DO49(6) Cabinet Defence Committee note by the Minister of Defence dated 28 January 1949 in TNA PREM 8/990 gave 9.7 short tons for the Skymasters as did *Berlin Airlift: A USAFE Summary*, p. 79. Narratives in miscellaneous papers held by AHB cited 9.5 as is implied by the calculations quoted by Miller in *To Save a City* (Texas A&M) pp. 197-198. Tunner, pp. 187, 197-198 recorded the same calculation but elsewhere used 10 tons. In the HQ CALTF Plans Division paper of 25 June 1949 'Requirements to Lift 3500 tons to Berlin Daily' in TNA, AIR 38/301 it was intended to use 'stripped' Skymasters each hauling 11 tons.

between 1 January 1949 and 30 September 1949 but only 108.5 were in commission.²⁷

Table 5.4 compares by base airfields the RAF fleet with USAF C-54s and the two highly productive USN R5D squadrons for the period 1 March to 31 May 1949. The table shows the RAF's under performance; the difference between USAF C-54s in the Northern (British) and Southern (American) Zones, and between the USN and the USAF at Rhein-Main Air Force Base [AFB].²⁸ RAF Wunstorf was near by the C-54s at RAF Celle and RAF Fassberg. Had its Yorks achieved during March, April and May 1949 the sortie rates of these American neighbours they would have delivered an extra 10 to 11.6 short tons per day per assigned aircraft into Berlin or up to 450 short tons.²⁹ Thus in the spring and early summer of 1949 the Yorks were achieving about 60% of what they might have been expected to do.³⁰

²⁷ Department of the [US] Air Force, Operations Statistics Division, *United States Air Force Statistical Digest Jan 1949 - Jun 1950 Fifth Edition* (Washington DC: US Government, 1951) USAF Airlift Data, Table 207.

²⁸ AFHRA, IRISNUM 241489, CALTF Statistical Summary June 1948 to 31 July 1949; Anon, '2 Navy Air Transport Squadrons Fly Record Loads into Berlin via Airlift', *All Hands* No. 390 (Aug. 1949); Anon, 'Navy Squadrons Lead Pack', *Naval Aviation News* No. 293 (May 1949); Anon, 'Navy Wins Airlift Honors', *Naval Aviation News*, No. 299 November 1949; AP3257, pp. 520, 523, 529; J. G. Barlow, USN Historian, 'The US Navy's Participation in the Berlin Airlift', (Naval Historical Centre DC) <www.history.navy.mil/branches/org4-10.htm> [accessed 20 July 2012]; *Berlin Airlift: A USAFE Summary*, pp. 5, 15; Navy History and Heritage Command, VR-6 Historical Reports for 30 October 1948 to 31 May 1949 and semi-annual report for 1 July to 31 December 1949; Navy History and Heritage Command, VR-8 Historical Report 1 July-31 December 1949 [no reports were issued during the Blockade]; TNA, AIR 55/110, Monthly Form STATS 120 records; *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 207.

VR-6 Historical Reports for March, April and May 1949: VR-8 out performed VR-6 in two of the three subject months and both did better than the USAF squadrons at Rhein-Main AFB. In March VR-6 did 901 trips hauling 9161 tons. In April VR-6 hauled 11,938.3 tons in 1,174 trips. In May the VR-6 figures were 962 trips and 9847.4 tons. VR-6 R5Ds were hauling 10.2 tons per delivery.

²⁹ AFHRA, IRISNUM 241489, 'CALTF Statistical Summary'; AP3257, p. 523; TNA, AIR 55/110, Monthly Form STATS 120 records.

³⁰ Charlesby examined RAF performance at length coming to similar findings about under performance - TNA: AIR 55/98, AIR 55/99, AIR 55/100, and AIR 55/102.

<u>Aircraft Type</u>	<u>Base</u>	<u>Gross Short Tons/ Aircraft at base/Day</u>	<u>Trips/ Aircraft at base/ Day</u>
Dakota	RAF Lubeck	4.4	1.3
Hastings	RAF Schleswigland	13.2	1.5
York	RAF Wunstorf	15.8	1.9
C-54	RAF Celle	32	3.3
C-54	RAF Fassberg	30.3	3.1
Skymaster	Rhein-Main AFB	28.5	2.8
(C-54	USAF at Rhein-Main AFB	27.7	2.7)
(R5D	USN at Rhein-Main ³¹	31.5	3.4)
C-54	Wiesbaden AFB	22.6	2.3

Table 5.4: Average Daily Tonnage Carried by Military Aircraft during March, April, May 1949

The British terms 'strength' and 'serviceable' and the American ones 'assigned', 'on hand' and 'in commission' whilst similar were not the same.³² After smoothing out the differences between RAF and USAF and using statistics for June 1949, Charlesby concluded that the assigned C-54s at RAF Celle and RAF Fassberg were flying three times more trips than the RAF Yorks based close by at RAF Wunstorf. Charlebury's smoothing led to inclusion of all aircraft other than RAF ones undergoing major overhauls at contractors, American ones in the USA for 1,000 hour overhauls, and aircraft from both countries undergoing major repairs. His figures were: C-54s at RAF Celle 41.1 and at RAF Fassberg 45.9; Yorks (in BAFO and the Airlift ones in Britain) 64.9, and on the same basis a total of 31 Hastings.³³ A summary of the differences in recorded statistics is given in Appendix 3 "Comparison of Aircraft Utilization Data for June 1949". Whilst the RAF's inability to deliver American sized tonnages was due partly to numbers of aircraft and sizes

³¹ AFHRA, IRISNUM 1038190, Lt Gen Rawlings (Comptroller USAF) 27 January 1949, recorded that the payload of the R5D was potentially 1,500lbs greater than the C-54.

³² As the Note on Page 98 of *Berlin Airlift: A USAFE Summary* recorded, there were statistical differences even within USAFE.

³³ AP3257, Annexure 5 to Appendix K; TNA, AIR 55/102, Charlesby 21 July 1949.

of payload, the reasons were wider as is explored below.

Table 5.5 provides similar data for the Civil Lift to that in Table 5.4 for the military Airlift. There are no sure statistics to separate by aircraft type the civilian 'Wet Lift' from the "dry" one.³⁴

<u>Aircraft Type</u>	<u>Short Tons/Aircraft at base/Day</u>	<u>Round Trips/aircraft at base/day</u>
Halifax	13.9	2.1
Lancastrian	20.8	3.0
Liberator	12.1	1.7
Tudor	25.4	3
York	25.7	2.7

Table 5.5: Average Daily Tonnage Carried by the Civil Lift during March, April, May 1949

Table 5.6 combines graphically Tables 5.4 and 5.5 to show how the small Dakota was dragging down the Airlift tonnage and not just because the type was the first to be withdrawn from the timetable when adverse weather prevented the system operating up to its saturation level.³⁵ The Dakota occupied RAF Lubeck.³⁶ It consumed technical ground staff and had similar sized crews to the larger Hastings and Yorks - albeit at a lower crew to aircraft ratio; see Table 5.7 below.³⁷ These resources could have been diverted to improve RAF capabilities elsewhere in the Airlift.³⁸

³⁴ AFHRA, IRISNUM 241489, CALTF Statistical Summary; AP3257, pp. 520, 523, 530; TNA, AIR 55/110, Monthly Form STATS 120 records.

³⁵ AP3257, pp. 14, 17, 23, 158, 174, 356, 451, 520, 537-539; Barker, p. 28; TNA: AIR 2/10063, Es:45-52 Cannon/Williams 22 December 1948; AIR 2/10064, Es:54-58 DDASTO draft note on re-introduction of PLAINFARE August 1949; AIR 20/6891 ACAS(Ops) [AVM Hardman] undated Report on Visit to BAFO 30 September to 2 October 1948; AIR 55/100, E.17 Charlesby undated; AIR 55/110, Monthly Form STATS 120 records.

³⁶ AP3257, pp. 17, 324.

³⁷ AP3257, p. 537; TNA, AIR 2/10064, Es:54-58 DDASTO draft note on re-introduction of PLAINFARE August 1949.

³⁸ TNA: AIR 2/10064, Es:54-58 DDASTO draft note on re-introduction of PLAINFARE August 1949; AIR 55/100, E.30 Charlesby 22 March 1949.

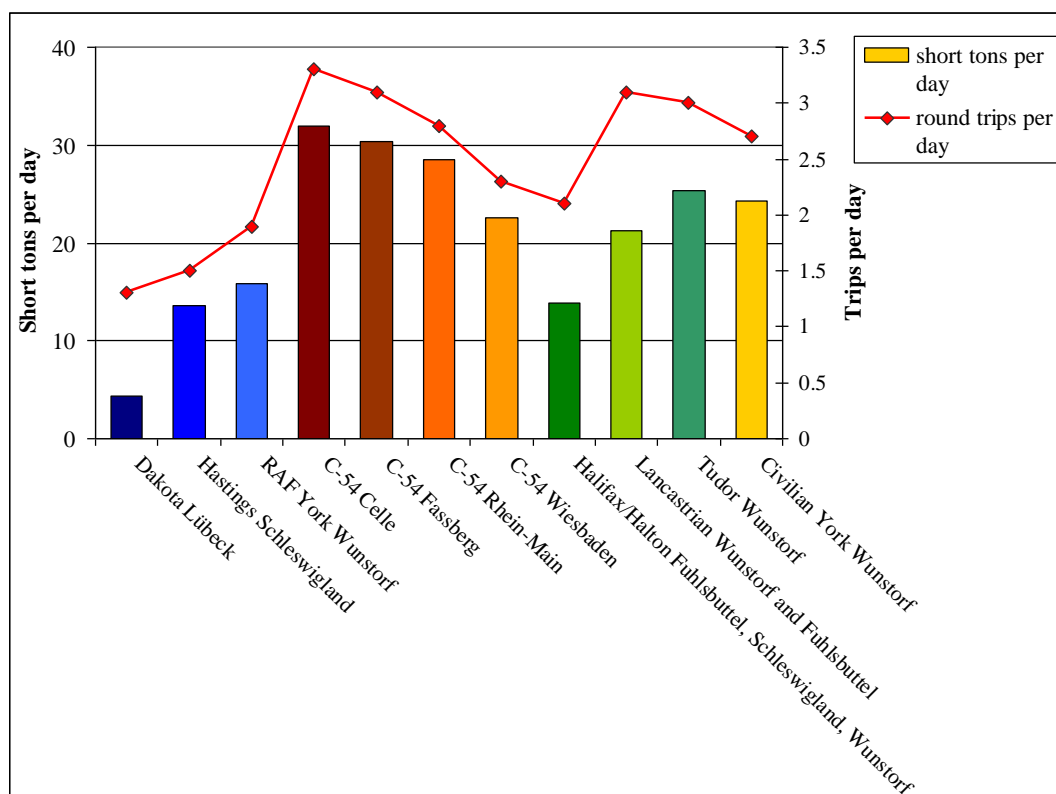


Table 5.6: Comparison of Average Daily Tonnage by Type and Base during March, April, May 1949

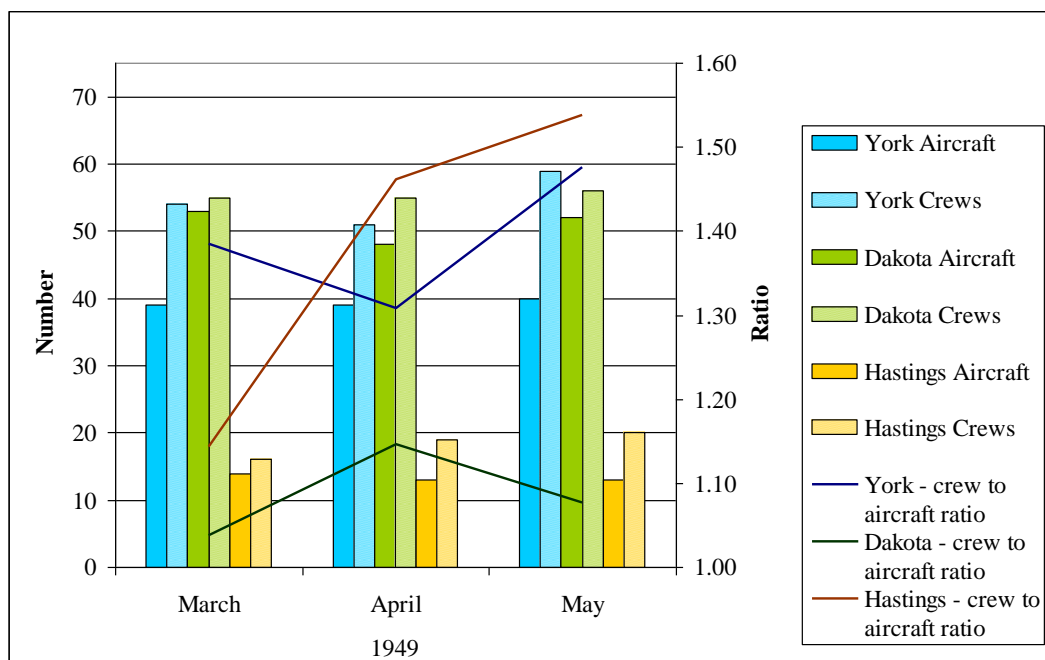


Table 5.7: Number 46 Group RAF Average Aircraft and Crew Strengths

In August 1949 DDASTO argued that medium range transports such as the Dakota were grossly uneconomical, and they complicated the sophisticated but necessarily

rigid air traffic control procedures and when IFR applied they had to be grounded to make way for larger aircraft. His draft paper on the re-introduction of the Airlift recommended that medium range force aircraft (Dakotas and Valettas) should only be used in small numbers for essential scheduled services.³⁹ ACAS(Ops), Air Vice Marshal Guest, reiterated that view, stating [The Dakota squadrons were] 'more an embarrassment than a really effective load-carrier'⁴⁰.

On 6 January 1949 the USAFE suggested to Merer that C-54s should be introduced into the RAF's fleet to improve the lift.⁴¹ It appears to have been made unofficially and without any details. Williams reported the suggestion to Walmsley and the matter gained momentum.⁴² It became the subject of documents and discussion across the involved Ministries and the RAF. It was raised with Cannon by Williams and then towards the end of January Marshal of the Royal Air Force [MRAF] Lord Tedder, Chief of the Air Staff, spoke to Cannon and Tunner about the proposal. VCAS recorded that following these conversations Tedder intended to approach Vandenberg directly.⁴³ (Tunner described the aircraft at the start of 1949 as obsolescent 'cargowise' but it would have been an improvement on the Dakota.⁴⁴) In early March 1949 Tedder discussed the loan with General Hoyt Sandford Vandenberg, Chief of Staff USAF.⁴⁵

³⁹ TNA, AIR 2/10064, E.53 Revill 28 September 1949, Es:54-58 DDASTO draft note on re-introduction of PLAINFARE August 1949 - triggered by Cabinet Paper C.P(49) 154 15 July 1949.

⁴⁰ TNA, AIR 2/10064, Minute 157 by ACAS Ops, AVM Guest, 25 August 1949.

⁴¹ TNA, AIR 2/10063, E.58 HQ BAFO AX545 7 January 1949.

⁴² TNA: AIR 2/10063, Es:24-25 Meeting 18 January 1949, E.58 HQ BAFO AX545 7 January 1949; AIR 20/6892, Walmsley to VCAS 26 January 1949 (for quotation).

⁴³ TNA, AIR 2/10064, E.345 MFM 4 March 1949 and E.346 an undated and unsigned draft gave summaries of the loan progression up to early March 1949 and that 7 March 1949 was the date planned for Tedder/Vandenberg meeting.

⁴⁴ Tunner, p. 197. The undated and unsigned draft at TNA, AIR 2/10064, E.346 recorded that Tunner had proposed the original C-54 loan to Merer but E.345 which may have been raised from the draft, made no such statement.

⁴⁵ LoC, 'Hoyt Sanford Vandenberg Papers: A Register of his papers in The Library of Congress', (Washington DC: Manuscript Division, 2008) Scope and Content Note, p. 4.; Reuters, 'Skymasters only on the Airlift?: Increasing Efficiency', *Manchester Guardian*, 25 February 1949; TNA: AIR 2/10063, E.12 draft signal February 1949, Es:21-25 Meeting 18 January 1949; AIR 20/6892, Air Ministry MSX850 4 February 1949, Air Mshl Sir Arthur Sanders (VCAS) 28 January 1949; AIR 20/7148, extract of Gen.241/4 Committee Meeting Footnote continues on next page.

The Tedder/Vandenberg discussion is surprising as Air Chief Marshal Sir Charles Medhurst of the Joint Services Mission to Washington had replied to a personal signal from Tedder on 2 February 1949, saying: 'As regard loan of C.54's here again I am afraid answer will be negative since they are themselves completely stuck for spares and feel they cannot release any to us. I understand wear and tear on those being used in airlift is greater than they expected and their repair and maintenance facilities are not (R) not what they hoped they would be.'⁴⁶ In fact the reply seems gentle to modern eyes given that the text of the brief to Vandenberg before his meeting with Medhurst ended: 'Recommend that Sir Charles be given a definite NO to his request' [anticipated to be 24 C-54s with spares and maintenance equipment].⁴⁷ In his discussion with Tedder in March 1949 Vandenberg's position was that the loan was unlikely as the aircraft was obsolescent and the USAF was having great difficulties getting replacements and spares.⁴⁸ Bevin had stressed the C-54 spares problem to the Committee of Ministers in early February 1949.⁴⁹ In the event because the Airlift ran down thereafter no 'operational loan' was necessary.⁵⁰

In a modified form, 'C-54 or other ten-ton carriers'⁵¹, it was a critical element of the Cannon/Williams 'Long Range Plan for Berlin Airlift' joint appraisal and

7 February 1949; USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, Air Cdre H. E. Nowell 3 February 1949.

⁴⁶ TNA: AIR 2/10064, E.332 Extract from BJSM Signal AX910 24 February 1949 (under cover E.331, APS to CAS 4 March 1949), E.345 MFM 4 March 1949; AIR 20/6892, Draft by DCAS 2 February 1949.

⁴⁷ LoC, Vandenberg Papers, Container 40, Britain folder 2 1949, Smith dated 4 February 1949.

⁴⁸ TNA, AIR 2/10573, Es:132-138 under cover of James 30 April 1949, p. 2, E.183 James 18 March 1949.

⁴⁹ TNA, AIR 20/6892, brief CBN.241/4 by Bevin to Meeting of Ministers 7 February 1949.

⁵⁰ TNA: AIR 2/10063, Es:21-26 Meeting 18 January 1949, pp. 4-5; AIR 55/218, Es:147-148 Charlesby 18 March 1949 - availability of sufficient crews to fly the C-54s 'unlikely during the present year'.

⁵¹ TNA, AIR 20/6892, James 10 March 1949, Williams to Robertson 26 February 1949; USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, McGuire 8 March 1949.

consequently included in correspondence from Robertson to Bevin.⁵² As late as 23 March 1949 British proposals for US military Aid included provisionally 50 C-54s.⁵³ In April 1949 Major General Samuel Anderson, Director [USAF] Plans and Operations, submitted a paper 'Factors and Implications affecting the Continuation of Operation VITTLES at the Present or on an Expanded Scale' to Vandenberg which stated that the 'proposed transfer of 50 C-54s to the British was not feasible'.⁵⁴

In apparent anticipation of a possible negative outcome to the loan request⁵⁵ the Air Ministry and the inter-Ministry working party looked at alternative approaches such as increasing the Civil Lift and especially the number of large four-engine Avro Tudors that fitted the Airlift role comfortably. The options were estimated to cost between £14M and nearly £21.8M per annum against the then authorised ceiling of £9.6M.⁵⁶ What does not appear in the National Archives [TNA] records is how the airspace limitations in adverse weather would have been handled without Dakotas to ground.⁵⁷

Why did the RAF expend so much effort trying to acquire an aircraft that the

⁵² TNA, AIR 20/6892, Robertson to Bevin 4 March 1949, Appendix A to brief for ACAS ahead of 25 February 1949 Meeting (copy of Brownjohn 27 January 1949), Cannon/Williams 14 February 1949.

⁵³ TNA: AIR 2/10064, E.281 Whittuck 23 March 1949, Es:302-303 ACAS(Ops) minute 15 March 1949; AIR 2/10573, E.183 James 18 March 1949 'premature, therefore, to say that we shall not get any of this type'; FO 1012/298, E.71 AL/103/1/1/Air 7 April 1949 [Name of HQ Airlift Gp Capt missing from signature block].

⁵⁴ USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, attachment to Anderson 13 April 1949, p. 3.

⁵⁵ TNA: AIR 20/6892, Meeting 16 February 1949; AIR 20/6893, DCAS Meeting 29 March 1949 'improbable' and Interdepartmental Working Party 30 March 1949 'slight'.

⁵⁶ TNA: AIR 2/10063, Es:51-52 Appendix C to Cannon/Williams 22 December 1948 (Es:45-48); AIR 2/10573, Es:119-123 paper on long-term civil lift under cover Smith (FO) 24 May 1949, Es:132-138 James 30 April 1949, Es:144-146 Seal (FO) 28 April and Cribbett (MCA) 25 April 1949, Es:175-177 Meeting 28 March 1949; AIR 20/2071, Whitfield 19 March 1949, FO (German Section) No. 1636 Basic 8 April 1949; AIR 20/6892, Meeting 16 February 1949; AIR 20/6893, Interdepartmental Working Party Meetings on the Contribution of Civil Aviation to Berlin Airlift on 30 March and 26 April 1949, DCAS Meeting 29 March 1949, James 30 March and 20 April 1949, Rainsford 10 March 1949, Walmsley 17, 19 and 30 March 1949; AVIA 54/416, Tudor Conversion for Berlin Airlift.

⁵⁷ TNA: AIR 2/10063, Es:45-48 Cannon/Williams 22 December 1948; AIR 20/6891, ACAS(Ops) [AVM Hardman] undated Report on Visit to BAFO 30 September to 2 October 1948; AIR 20/7804, Cross 24 September 1948.

Americans deemed obsolescent? The rationale provides an understanding of Britain at the time. The RAF's transport fleets at home and overseas were over-committed.⁵⁸ The Government - not solely the RAF - was sensitive about its poor performance, inadequate aircraft, and insufficient manpower. For example, in Foreign Office correspondence between Sir William Strang's German Section⁵⁹ and General Robertson during November 1948, British 'prestige' was mentioned in relation to relocating American aircraft to the Northern Zone to increase the tonnage delivered which could reduce British involvement to 'special types (tankers, etc)'. Robertson warned 'I note that you wish us to discontinue giving publicity to respective British and American shares of the airlift...I fear however the press will be likely to get hold of the information in any case'.⁶⁰ In December 1948, even when the lower sortie rate of the British was ignored, the American tonnage per flight (almost entirely C-54s) was 9.7 short tons whilst the British managed an average of 5.7.⁶¹ The C-54 was also attractive if the British could obtain it as an operation loan for the duration of the Airlift with the Americans supplying the spares and all servicing beyond first line. A loan and free spares would have avoided the Treasury expending dollars.⁶²

The in-vogue phrase 'C-54 or other 10 ton carrying aircraft' appears to have been "spin". The Douglas DC-6 (successor to the DC-4) was not yet on order for the

⁵⁸ TNA, AIR 2/10064, E.346 undated draft.

⁵⁹ Permanent Under Secretary for the German Section at the Foreign Office becoming Permanent Under Secretary of State for Foreign Affairs in 1949; replaced in the German Section by Sir Ivone Augustine Kirkpatrick - Ann Lane, 'Kirkpatrick, Sir Ivone Augustine (1897–1964)', in *Oxford Dictionary of National Biography*, ed. by Brian Harrison (Oxford: Oxford University Press, 2004) <www.oxforddnb.com/view/article/34339> [accessed 9 July 2013]; Anne Deighton, 'Strang, William, first Baron Strang (1893–1978)', in *Oxford Dictionary of National Biography*, ed. by Brian Harrison (Oxford: Oxford University Press, 2004) <www.oxforddnb.com/view/article/31729> [accessed 9 July 2013].

⁶⁰ TNA: AIR 20/6891, Frankfurt, 920 Basic, 6 Nov 48 (for "prestige" and "press" quotations); AIR 2/10063, Es:158-159 FO (German Section) 3212 Basic, 3 November 1948 (for "special types" quotation). Example of ambiguous use of "RAF": TNA, AIR 20/6892, HQ BAFO AX572 5 February 1949, AM AX1644 10 February 1949, HQ BAFO, AX576 12 February 1949, AM MSX850 4 February 1949. Salt was carried by Halifaxes in their panniers and became another specialty: TNA, AIR 20/7804, BAFO AO174 5 August 1948.

⁶¹ TNA, AIR 2/10063, Es:45-48 Cannon/Williams 22 December 1948.

⁶² TNA, AIR 2/10063, Es:21-26 Meeting 18 January 1949.

American military.⁶³ The British Avro York ('a difficult aircraft to keep serviceable' and with declining stocks of spares) was a long range aircraft which did not stand up well to intensive operations with short flights and frequent take-offs and landings at maximum payload.⁶⁴ The York's relatively level fuselage when parked and high wing configuration helped cargo handling as did the large doors on the freighter.⁶⁵ The position and the size of the door on passenger versions, however, caused problems.⁶⁶

The York's replacement, the Handley Page Hastings was entering service late; from a production line that was delivering (and could only deliver) a mere handful a month; with inevitable teething troubles; a lack of spares to support such intensive operations, and significantly, with several design faults of which instability at low speed had to be corrected by redesign before further orders would be placed.⁶⁷ The issue of the Hastings tail wheel arose during the 16 February 1949 meeting after AOC-in-C BAFO reported that runways were being damaged owing to the configuration. The limitations of tail wheels were not unknown. There were loading and off-loading problems owing to the fuselage slope and high sensitivity to cross-winds.⁶⁸ Handley Page's proposal for a rear loading, tricycle undercarriage

⁶³ TNA: AIR 2/10064, Es:172-178 Williams 21 April 1949; AIR 55/218, Es:185-188 Merer 13 January 1949.

⁶⁴ TNA: AIR 20/6891, ACAS(Ops) undated report on visit to BAFO 30 September to 2 October 1948 (for quotations) and Meeting 5 October 1948, Rainsford 24 September 1948; AIR 20/6892, Meeting 16 February 1949.

⁶⁵ AP3257, p. 158; John Dowling, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989) p. 66, and see Photograph 17 above.

⁶⁶ RLC Museum, Photographs of loading and unloading Yorks.

⁶⁷ Alan W. Hall, *Handley Page Hastings* (Bletchley: Warpaint Books Ltd, undated [British Library cites '2007?']); TNA: AIR 2/10063, Es:21-26 Meeting 18 January 1949, E.43 Air Ministry AX1171 dated 12 January 1949; AIR 20/6891, Brief for DDASTO 17 January 1949; ACAS(Ops) Meeting 5 October 1948; AIR 20/6892, Williams 26 February 1949, Meeting 16 February 1949, DDTO/DDASTO paper 17 January 1949, undated (immediately prior to 17 January paper) Agenda for Meeting to discuss the problems involved in maintaining the operation for an indefinite period; AIR 20/7148, DDPol(AS) 11 February 1949; AIR 24/2046, AOC-in-C's Staff Conference 28 June 1948, SASO Weekly Conference 28 June 1948.

⁶⁸ AP3257, pp. 80, 158; TNA: AIR 20/6892, Meeting 16 February 1949; AIR 28/1049, RAF Honington ORB and Appendices, especially Station Commander's remarks generally and June 1948 specifically about Hastings's design defects. See thesis, Photograph 15.

Hastings (HP89 Mark VI) had been under discussion with the Air Ministry and the War Office since 10 June 1948 and a tricycle civil airliner, the Hermes IV, was under construction for BOAC.⁶⁹ Nevertheless, the Assistant Chief of the Air Staff (Technical Requirements) at the Air Ministry was minuted as saying that 'he could not give a spot estimate' on the delays caused by a major modification such as tricycle undercarriage.⁷⁰

Aircraft with greater load carrying capability were imperative but the Vickers Valetta, not the Hastings, was the planned replacement for the Dakota and its payload was similar to the Dakota.⁷¹ The Skymaster, a militarized variant of the DC-4, had evolved during the late 1930s and very early 1940s as a long range passenger airliner for American operators.⁷² It performed extremely well during the Airlift, being a rugged, tested workhorse, hauling greater payloads than the York, and for most of the Airlift, the Hastings.⁷³ Had they received C-54s⁷⁴ the RAF intended to use them to replace the Dakota. The questionable assumption was that

⁶⁹ C. H. Barnes, *Handley Page Aircraft since 1907* (London, Putnam, 1976) pp. 438-440, 447; Victor Bingham, *Handley Page Hastings and Hermes* (Peterborough: GMS, 1998) pp. 11-12; Hall, p. 16; Hansard, HC Deb 01 August 1951 Vol. 491 cc1470-1473, Air Commodore [Rtd] Harvey (Macclesfield) stated a specification and mock-up of the rear loading Hastings with raised tailplanes was submitted to the Air Ministry over 12 months ago (i.e. in 1950 not 1948) but it attracted 'very little interest'.

⁷⁰ TNA, AIR 20/6892, Meeting 16 February 1949.

⁷¹ TNA: AIR 2/10063, Es:51-52 Cannon/Williams 22 December 1948 Appendix C; AIR 20/6891, Brief for DDASTO 17 January 1949; AIR 20/6892, Meeting 16 February 1949, Brief for DDASTO for Meeting 16 February 1949.

The RAF transport fleet at the time was organized by the distance the aircraft flew routinely. The medium range force specification was satisfied by the Dakota and subsequently the Valetta and the long range one by the York. Flights carried very high priority passengers and a little mail and freight; everything else travelled by surface means. The concept of differentiation by size of load would not enter the equation until the Blackburn Beverley entered service in 1956 although it was under development prior to Operation PLAINFARE. It was able to haul 22 tons over 200 miles - Beverley Association <www.beverley-association.org.uk> [accessed 29 November 2012]; 'Universal Transport', *Flight*, 5 February 1948 <www.flightglobal.com/pdfarchive/view/1948/> [accessed 29 November 2012] pp. 150-154; 'Aircraft at the Show', *Flight*, 14 September 1950 <www.flightglobal.com/pdfarchive/view/1950/> [accessed 29 November 2012] p. 289. See Photograph 18 above.

⁷² Ken Wixey, *The Douglas Skymaster Family* (Stroud: Tempus, 1999) pp. 15-17, 51-55.

⁷³ TNA, AIR 2/10063, Es:45-52 Cannon/Williams 22 December 1948 including Appendixes.

⁷⁴ TNA, AIR 20/6892, Robertson 4 March 1949, Maj Gen G. K. Bourne - GOC Berlin - to Robertson 3 March 1949, Cannon/Williams 14 February 1949.

conversion would be easier than to an alternative four-engine type because both were made by Douglas.⁷⁵

At the end of September/beginning of October 1948 ACAS(Ops) had found York serviceability was at 40%, Hastings 50% and Dakotas 60% with 'over-snagging' by York aircrews who, unlike the Americans, were assigned to a pool rather than retained in their squadrons, resulting in low morale. The maintenance personnel and the aircraft were also pooled which added to the problem.⁷⁶ AP3257 was critical of pooling and of the appropriateness and application of the new technical wing concept to Operation PLAINFARE.⁷⁷ The 14 February 1949 joint Cannon/Williams long term appraisal, albeit on the assumption that the RAF would receive C-54s on loan, looked for higher manning and adequate spares and equipment so that the serviceability across the fleet would reach 65%.⁷⁸ James probably expressed the Air Ministry's "feelings": 'However much the British contribution to this "acceptable scale of maintenance" seems beyond our powers we do at least know what ought to be achieved'.⁷⁹ As discussed earlier, the numbers of Skymasters in commission and assigned to 1st ALTF Groups varied at different times. Those in commission fell from a monthly average of 60% after October 1948 and remained there until June 1949, with the lowest point approaching 50% in January 1949.⁸⁰ Thus the Americans had difficulties too but theirs were not as great as the RAF's.

Transport Command had assigned much of its small medium and long range fleets to Operation PLAINFARE. Its aircrews, especially signallers and navigators, were

⁷⁵ TNA: AIR 2/10063, Es:18-20 undated draft agenda; AIR 20/6891, Brief for DDASTO 17 January 1949; AIR 20/6892, Cannon/Williams 14 February 1949. Conversion to Hastings, 'a difficult British four-engine type' by Dakota crews 'would be formidable' - TNA, AIR 20/6891, Brief for DDASTO 17 January 1949.

⁷⁶ TNA: AIR 2/10063, ACAS(Ops) undated report on visit to BAFO 30 September to 2 October 1948; AIR 55/98, E.85 Charlesby 29 July 1949 for first line servicing developments in 1949 to mitigate the impact of pooling.

⁷⁷ AP3257, Part 12; also John Dowling, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989) p. 66 on pooling generally and of 'ground crew' specifically.

⁷⁸ TNA, AIR 20/6892, DCAS brief for 25 February 1949 Meeting at Foreign Office, Cannon/Williams 14 February 1949.

⁷⁹ TNA, AIR 20/6892, James 10 March 1949, Williams 26 February 1949.

⁸⁰ *Berlin Airlift: A USAFE Summary*, pp. 82-83, 96-98.

losing skills through lack of application. (On 19 November 1948 a junior member of the Air Ministry stated that the Berlin Airlift was analogous to 'a Green Line Bus Service.....all flights are the same'.⁸¹) Second pilots were not usually carried and so they received neither familiarisation nor continuation training. Some were being employed on extraneous ground duties. The Airborne elements of the Army were suffering too as their support was a Transport Command task. Furthermore, the same Command was an intrinsic part of the reinforcement plans for the Middle East but with its aircraft and its aircrews deployed in Germany, air mobility could not be practiced and aircrew members had either no recent experience of such flying or none at all.⁸² As early as 13 December 1948 ACAS(Training) was minuted as saying that 'It had taken years to build up Transport Command and we could not afford to allow the present state of affairs to continue'.⁸³ It was essential to withdraw part of the RAF task force for other duties.⁸⁴

Throughout the Airlift the RAF was short of aircrew ('critical....with no sign of any improvement'⁸⁵) and experienced, thoroughly trained technical tradesmen.⁸⁶ Sorties were being lost in Germany owing to insufficient manpower. Charlesby concluded that the limiting factor for the Americans was aircraft and aircraft utilization but for

⁸¹ TNA, AIR 20/6891, Bennett (Sqn Ldr, TO1a) 19 November 1948 - no doubt many aircrew would dispute this, citing flying in poor weather.

⁸² TNA: AIR 2/10063, Es:18-20 undated draft agenda, Es:21-26 Meeting 18 January 1949, E.43 Air Ministry AX1171 dated 12 January 1949, Es:71-72 Meeting 13 December 1948; AIR 2/10064, Es:335-340 DDASTO March 1949; AIR 20/6891, Guest 10 December 1948; AIR 20/6892, DDTO/DDASTO paper 17 January 1949, Walmsley 26 January 1949, War Office letter dated 26 January 1949, James 27 January 1949, Bevin CBN.241/4; AIR 24/2048, minutes of SASO meeting 4 October 1948. An element of 'Yes Minister' was involved when diverting aircraft from the Airlift or allocating aircrews - F. F. Rainsford, *Memoirs of an Accidental Airman* (London: Harmsworth, 1986) pp. 105-107 and 'Freddie' Rainsford, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989).

⁸³ TNA, AIR 2/10063, Es:71-72 Meeting 13 December 1948.

⁸⁴ TNA, AIR 20/6892, Bevin CBN.241/4.

⁸⁵ TNA, AIR 2/10064, E.295 Walmsley 17 March 1949.

⁸⁶ Hansard: 'Strength of the Royal Air Force', HL Deb 2 March 1949 Vol. 161 cc64-118, 'Servicing and Maintenance', HC Deb 21 March 1950 Vol. 472 cc1822-1918; TNA: AIR 2/10063, E.14 HQ BAFO A557 27 January 1949, Es:18-20 undated draft agenda; AIR 20/6891, Meeting 20 September 1948; AIR 20/6892, ACAS(Ops) 9 March 1949, Rainsford 9 March 1949, DDASTO 28 February 1949; AIR 20/6893 Notes on DCAS meeting with SASO No. 46 Gp. undated but March 1949.

the RAF 'manpower shortages are a [the meaning is "the"] critical factor, and it is their utilization which should be increased'. He calculated, for example, that seven additional York and Hastings crews on the Airlift in Germany, plus a further 3.5 on rotation in the UK, would increase the daily haul across the year by 71 short tons.⁸⁷

Personnel shortages worsened at the end of March 1949 as the Government kept its promises about demobilisation.⁸⁸ As early as 23 July 1948 the planned assignment of C-54s to Operation VITTLES rose to 126. Each aircraft was assigned three crews which meant that about two thirds of all C-54 aircrews were committed. Merer stated in January 1949 that two thirds of American crews would shortly be recalled reservists. This approach was operationally sensible but was not an avenue that the British Government would adopt.⁸⁹ Conscription was essential as an Air Ministry brief for a Conference on Long-Term Requirements for Operation PLAINFARE 16 February 1949 recorded: 'If increases in Transport Command are made there will have to be either: corresponding reductions elsewhereor a call-up from civil life. It is useless to talk of increasing the size of the RAF unless we are given more money and trained men are conscripted from civil life - we won't get volunteers'.⁹⁰

Over time the American aircrew to aircraft ratio grew to five aerial engineers (crew chiefs) per aircraft and towards the end of the Airlift an aspiration for 3.6 pairs of pilots, albeit not all would be on duty at one time. In July 1949 1,258 'assigned duty' pilots had flown with 1st ALTF and by 1 July 1949 the USAF Great Falls Replacement Training Unit had passed out 1,675 pilots.⁹¹ *The Statistical Digest*

⁸⁷ TNA, AIR 55/100, Es:30-33, 22 March 1949.

⁸⁸ TNA: AIR 2/10063, Es:21-26 Meeting 18 January 1949; AIR 19/766, Meeting 17 March 1949; AIR 2/10064, Es:335-340 DDASTO March 1949; AIR 20/6891, Meetings 27 July, 23 August 1948 and 20 September 1948; AIR 20/6892, Bevin CBN.241/4, AMP Air Council note undercover of Saunders (AMP) 16 March 1949, AMP Air Council note 31 March 1949; AIR 20/6893, Walmsley 17 March 1949.

⁸⁹ Anon, '[US] Air Force Officers Recalled', *The Task Force Times*, 2 December 1948; Miller, *To Save a City* (Texas A&M) pp. 93, 142; TNA: AIR 2/10063, Es:21-26 Meeting 18 January 1949; AIR 20/6892, Bevin CBN.241/4, Notes on Interdepartmental Meeting 14 February 1949 in AIR 20/6892 not only recorded strong political objections to recalling civil airlift reservists but to the requisition of civilian aircraft.

⁹⁰ TNA, AIR 20/7148, DDPol(AS) 11 February 1949 Brief for meeting.

⁹¹ AP3257, p. 285; Anon, 'A Special Study of Operation "Vittles": the story of the Berlin Airlift', *Aviation Operation Magazine*, Vol. II, No. 5 (New York: Conover-Mast, April 1949) pp. 10-11; Anon, 'Navy Wins Airlift Honors', *Berlin Airlift: A USAFE Summary*, p. Footnote continues on next page.

gave a daily average for May 1949 of 2.3 USAF aircrews available on Airlift bases per C-54 available to the 1st ALTF operating groups with each aircraft delivering on average 2.9 cargoes (including passengers) per day.⁹²

In February 1949 Walmsley had proposed three crews per RAF aircraft and in a pre-meeting brief 3 to 3.5 were suggested.⁹³ Merer argued that air crews should be determined by the number of sorties that maintenance could provide.⁹⁴ As planning at the time called for 2.4 sorties per day, no increase appeared to have been needed (which seems contrary to Charlesby's conclusions in March 1949⁹⁵) and the RAF were having great difficulty finding enough crews for its current needs let alone expanding them.⁹⁶ The sole exception would have been the loaned C-54 where three crews per aircraft were proposed in recognition of its capability for high intensity operations.⁹⁷ The RAF plans that emerged to maintain indefinitely its average of 1,000 short tons daily (1,061 short tons actually) were for 191 aircrews (41% Dakotas) to be assigned to the Airlift and actually in Germany to fly a multiple-type fleet of 96 aircraft (42% Dakotas).⁹⁸ The actual strength in Germany at the time of planning was 115 aircrews (39% were Dakota crews) and 106 aircraft (52% Dakotas).⁹⁹

Attempts were made by the RAF to detach aircrew from non-flying posts and other

123; TNA, AIR 2/10063 Es:21-26 Meeting 18 January 1949; *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 207. Daniel W. Christensen, Capt. USNR, 'Navy Air in the Berlin Airlift: Remembrances of an Enlisted Pilot', *Naval Aviation News*, 78, No. 2, January-February 1996 records that the USN two squadrons each operated at a strength of 12 aircraft and 36 crews.

⁹² *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 207.

⁹³ TNA, AIR 20/6892, Meeting 16 February 1949, Brief for DDASTO for Meeting 16 February 1949.

⁹⁴ TNA, AIR 20/6892, Meeting 16 February 1949.

⁹⁵ TNA, AIR 55/100, Es:30-33 22 March 1949.

⁹⁶ TNA: AIR 2/10064, Es:335-343 DDASTO March 1949; AIR 20/6892, Brief for DDASTO for Meeting 16 February 1949.

⁹⁷ TNA: AIR 2/10064, Es:302-303 ACAS(Ops) 15 March 1949 - assumed a frontline establishment of circa 30 Skymasters; AIR 20/6892, Brief for DDASTO for Meeting 16 February 1949.

⁹⁸ TNA, AIR 20/6893, Rainsford 31 March 1949.

⁹⁹ TNA, AIR 20/6893, undated notes but during March 1949 on a meeting between DCAS and SASO No. 46 Gp.

Commands.¹⁰⁰ Both Transport Command and Bomber Command had an establishment of 144 four-engine crews. This was a far cry from the Command that frequently mounted 1,000 four-engine bomber raids at night. In September 1948 the Air Ministry concluded that if Bomber Command was committed to the Airlift as its first priority, on a sustained basis, locating its aircraft in Germany, it could make 27 deliveries per day totalling between 67.5 and 121.5 (probably long) tons, depending on product. Only 52 of its pilots had the instrument ratings that would have permitted them to have flown in the Berlin Airlift. By February 1949 there had been a little improvement with 80 rated crews.¹⁰¹ It is not surprising that the Chief of the Air Staff, in the presence of the Secretary of State for Air, was minuted as saying that bombers should be engaged only 'as a last resort'.¹⁰²

Planning in March 1949 concluded that to maintain a degree of Transport Command's normal commitments; to convert from Yorks to Hastings, and Dakotas to Valettas; to maintain the Airlift long term; to meet the political demobilisation objectives and with the RAF's endemic shortages of aircrew and tradesmen whilst not recalling reservists, meant that rather than delivering 1,000 short tons daily the figure could fall to between 650 and 750 short tons.¹⁰³ Aircrew shortages were greatest amongst navigators and in the post-war RAF the non-commissioned trades of signaller and air engineer.¹⁰⁴

Substantial discussion arose about whether RAF aircrews and ground personnel should be posted to BAFO on full tours or should be rotated between BAFO and Transport Command on various cycles. Nothing was implemented for aircrew

¹⁰⁰ TNA: AIR 2/10063, Es:71-72 Meeting 13 December 1948; AIR 2/10064, Es:335-340 DDASTO March 1949.

¹⁰¹ TNA: AIR 20/6891, Report DDB(Ops) BF97 dated 20 September 1949 undercover of Walmsley 20 September 1948, Meeting 20 September 1948, Hardman 21 September 1948; AIR 20/6892, Walmsley 26 January 1949, Saunders 28 January 1949, Sutcliffe 15 February 1949 and attached TO1(a) paper, Meeting 16 February 1949, Sanders 3 March 1949.

¹⁰² TNA, AIR 20/6891, Meeting held by Secretary of State 27 July 1948.

¹⁰³ TNA: AIR 2/10064, E.287 DDASTO 29 March 1949, Es:305-308 DDASTO 14 March 1949, Es:318-319 James 10 March 1949, E.329 Berlin Airlift Progress Report, Es:335-340 DDASTO March 1949; AIR 20/6892, DDASTO 28 February 1949.

¹⁰⁴ TNA: AIR 2/10063, Es:21-26 Meeting 19 January 1949; AIR 2/10064, E.329 Berlin Airlift Progress Report; AIR 20/6892 Walmsley 26 January 1949; AIR 20/6893 DCAS Meeting 29 March 1949.

before the Airlift ceased and thus the topic was not included in the thesis. The documents, however, help to identify further the shortage of aircrews and challenges facing the RAF if the Airlift continued long-term.¹⁰⁵ A précis of Transport Command's planning figures for June 1949 through April 1950 is given in Appendix 4.¹⁰⁶ In summary it planned on a potential of 1,377 short tons per day with the average expected across the period at 1,065. This would have been achieved by an average of 60 Hastings and Yorks in Germany (augmented by a slowly declining number of Dakotas) with an average of two heavy transport aircrews per aircraft. The heavy transport element would have been expected to average 2.1 deliveries per aircraft. Where the extra 524 aircrew needed to achieve these targets and the rotation plans would have come from is conjecture. The proposed draft from DCAS to VCAS was cautious in that regard.¹⁰⁷

In May 1949 the USAF daily average number of aircrews available on their Airlift bases for each USAF C-54 assigned to an Airlift group was 2.3 with each aircraft delivering an average 2.9 cargoes.¹⁰⁸ The significant difference between the USAF actual figures for May 1949 and the long-term British plan was the 0.8 extra deliveries per "assigned" aircraft per day that the Americans were already achieving above the British intentions.

The challenges that the under-resourced RAF faced are also apparent in DDASTO's August 1949 draft plan for the Long Range fleet of Hastings and Yorks. This was based on the experience during the Airlift and concluded that for every 60 aircraft operating on the Airlift a further 40 were needed as a maintenance reserve including those transiting to or from the UK and those undergoing inspection and maintenance there. DDASTO's planning potential was 2.2 sorties per day but for the eight

¹⁰⁵ Rainsford, *Memoirs*, pp. 106-107; TNA: AIR 2/10064, Es:305-308 DDASTO 14 March 1949, Es:270-272 DDASTO 31 March 1949, Es:251-260 Mackworth - Air Officer Administration Transport Command - 6 April 1949 with Appendixes, Es:249-250 Craven 7 April 1949; AIR 20/6892, DDTO/DDASTO 17 January 1949, TO1a paper under cover of Sutcliffe 15 February 1949, Meeting 16 February 1949, DDASTO 15 and 28 February 1949, Williams 26 February 1949; AIR 20/6893, Mackworth 6 April 1949, Ragg - SASO Transport Command, - 14 April 1949.

¹⁰⁶ TNA, AIR 2/10064, Es:251-260 Mackworth 6 April 1949 with Appendixes.

¹⁰⁷ TNA, AIR 2/10064, E.212 draft for DCAS 22 [pencilled date] April 1949.

¹⁰⁸ *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 207.

months of summer 20% of those potential sorties would be lost owing to weather and the figure was 40% in winter.¹⁰⁹ Adverse weather, especially fog reduced the sorties flown as did to a lesser degree severe icing in flight. Winter weather also adversely affected ground activities, particularly maintenance, which lessened the sorties that could be launched when the conditions improved.¹¹⁰

Manning shortages would have been helped by the loan of C-54s. The RAF would have mirrored the Americans and crewed the C-54 with two pilots and a crew chief thereby resolving elements of its shortage. One C-54 hauled the same as 2.8 Dakotas meaning less (and less complex) crews were needed per ton hauled and two of the latter squadrons would have been replaced by one of the former. The ground technical personnel shortages would also have been eased by the reduction in squadrons and by the RAF's proposal to limit its involvement in C-54 servicing to first line.¹¹¹

The Royal Australian Air Force, Royal New Zealand Air Force and South African Air Force provided aircrew for the Operation PLAINFARE Dakota pool.¹¹² The Netherlands offered aid from the start.¹¹³ Although the offer was of charter aircraft, Baugher's tables¹¹⁴ indicated that its Government (including the Dutch East Indies)

¹⁰⁹ TNA, AIR 2/10064, Es:54-58 DDASTO's draft note on re-introduction of PLAINFARE August 1949. Caution must be applied to the aircraft numbers and tonnages in the draft as. Minutes 156-157 and 159 Rainsford 23 August 1949, Guest 25 August 1949, Beringer 31 August 1949 recognized. The criteria and numbers work when calculating the capability of Plan "F" - the potential post-Airlift Transport Command establishment - but not when applied to calculate the additions needed to the Plan "F" to deliver an average across the year of 1,000 tons per day. There are pencilled and ink corrections which may be contemporaneous.

¹¹⁰ AP3257, pp. 24-25, Apps: J and K.4.

¹¹¹ TNA: AIR 2/10063, Es:21-26 Meeting 18 January 1949; AIR 20/6892, Meeting 16 February 1949 - finding enough second pilots would have been a challenge and the RAF considered using Navigators with addition training.

¹¹² AP3257, pp. 59, 142 - 10 crews were loaned from RAF Mediterranean and Middle East Command; TNA: AIR 2/10064, Es:305-308 DDASTO 14 March 1949, Es:285-287 DDASTO 29 March 1949; AIR 20/6893, James 4 April 1949; AIR 24/2047, Minutes of AOC-in-C Staff Conferences: 31 August 1948, 6 September 1948, 20 September 1948, 4 October 1948; AIR 28/978, ORB RAF Bassingbourn.

¹¹³ TNA: AIR 20/7816, Waite 29 June 1948; T 236/1025, E.34 to Playfair 21 August 1948, E.38 Serpell 23 August 1948.

¹¹⁴ Joseph F. Baugher, 'USAF Serial Numbers' <www.joebaugher.com/usaf_serials/usafserials.html> [last revised 2012] (1940-1946); Baugher, 'US Coast Guard Aircraft Serial Footnote continues on next page.

and airlines operated 22 Skymasters or DC4 airliners modified from Skymasters. Belgian and Swedish involvement was also suggested but like the Dutch they did not automatically have the right to fly their aircraft along the corridors and thus the matter progressed no further.¹¹⁵ (Although the Dutch did not participate in the air, the Royal Netherlands Air Force did provide German interpreters to the Airlift¹¹⁶).

Assistance from Canada was attractive, not just its aircrews and ground crews but its Merlin-engine variants of the DC-4, the Canadair North Star, that the Royal Canadian Air Force [RCAF] operated (as did BOAC from spring 1949).¹¹⁷ The Canadians were asked to participate on several occasions but avoided becoming embroiled.¹¹⁸ Canada was not one of the four occupation powers and so its North Stars would have had to fly under RAF or USAF markings.¹¹⁹ If aircrew alone had been provided to aid the British, they would have been pooled within the RAF as the Australians, New Zealanders and South Africans were.¹²⁰ Neither approach was attractive to a country that during the Second World War had perceived itself to be

Numbers' <www.joebaugher.com/coastguardseries.html> [last revised 2012] (Third Series); Baugher, 'US Navy and US Marine Corps Aircraft Serial Numbers and Bureau Numbers' <www.joebaugher.com/navy_serials/navyserials.html> [last revised 2012] (Third Bureau Number Series). [Dr Baugher researched in experimental physics at Brown University. His work collecting US military aircraft serial numbers and individual life histories is an on-going hobby].

¹¹⁵ TNA: AIR 20/6893, James 1 April 1949; FO 371/70496, Es:42-49 subfolder 'Discussion with General CLAY', E.79 FO No.1377 to Military Governor 29 June 1948; T 236/1025, E.34 to Playfair 21 August 1948, E.38 Serpell 23 August 1948, Es:41-42 initialled EWP 23 August 1948 (E.42 contains a handwritten note: 'Shot down I fear by Strang which is better than shot down by the Russians'), E.43 Playfair 23 August 1948, E.198 FO No. 1084 29 September 1948 covering 'unofficial' RAAF offer of aircrews and risks involved if 'forced down in Soviet territory'.

¹¹⁶ AP3257, p. 1.

¹¹⁷ TNA, AIR 20/6893 James 1 and 4 April 1949; Wixey, *The Douglas Skymaster Family*, pp. 21-22.

¹¹⁸ TNA: AIR 2/10064, E.293 CRO No. 362 21 March 1949; AIR 20/6891, High Commissioner in Canada No. 901 9 October 1948.

¹¹⁹ TNA: AIR 2/10064, E.225 James 28 March 1949; T 236/1025, E.198 FO No. 1084 29 September 1948 covering 'unofficial' RAAF offer of aircrews and risks involved as not being 'aircraft of the nations governing Germany'.

¹²⁰ Chris Clark, *Operation Pelican: The Australian Air Force in the Berlin Airlift* (Tuggeranong: RAAF Air Power Development Centre, 2008) pp. 47-49; TNA, AIR 2/10573, Es:175-177 Meeting 28 March 1949.

ignored in the upper echelons of Allied policy making and planning.¹²¹

Lieutenant General Maurice Pope's autobiography regularly recorded the impotence of Canada and its Military Mission to the Allied Control Council [in Berlin] and cited the shortfall in the loads hauled in to Berlin. There was no mention of requests for Canadian participation in the Airlift, however.¹²² Britain's early attempts to recruit Canadian help for the Airlift had insensitively attempted to play the Commonwealth card which had potential to cause political problems for the Liberal Administration.¹²³ Whether this justified William Lyon Mackenzie King misleading Parliament on 30 June 1948, however, must be a matter for Canadian interpretation.¹²⁴ Canadians did take part as serving members of the RAF¹²⁵ and

¹²¹ Anon, 'First Canadian Bomber Group [effective 1 January 1943], Service Aviation', *Flight*, dated 14 January 1943; Brereton Greenhous, Steven J. Harris, William C. Johnston, William G. P. Rawling, *The Crucible of War, 1939-1945: The Official History of the Royal Canadian Air Force: Volume 3* (Toronto: University of Toronto Press in cooperation with the Department of National Defence and the Canadian Government Publishing Centre, Supply and Services Canada, 1994) pp. 633-5; Library and Archives Canada, Record Group 25, DI, Department of External Affairs, Vol. 829: File/Dossier 9 as a whole and File/Dossier 20, Maj Gen Maurice Pope dated 10 June 1944 and ADP Heeney dated 27 June 1944 on Canadian wartime sensitivity; Urs Obrist, 'An Essential Endeavour: Canada and West Germany 1946-1957' (doctoral thesis, University of Toronto, 2006) pp. 44-50.

¹²² Maurice A. Pope, *Soldiers and Politicians* (Toronto: University of Toronto Press, 1962) pp. 296-298, 303, 319-320, 339-340, 341, 348, 351, 359-360, 362-364. TNA, AIR 20/7804, Es:31 and 34 Waite 9 September 1948 - 'Pope says that Canada is willing to help but has never been asked'.

¹²³ Clark, *Operation Pelican*, pp. 38-39; Library and Archives Canada, Record Group 2, Privy Council Office, Series A-5-a, Vol. 2643: 1949/03/22, 1949/03/29, 1949/04/12; Library and Archives Canada, Record Group 25, DI, Department of External Affairs, Vol. 829, File/Dossier 16, No. 1788 dated 12 October 1948 Robertson and Reid/RN dated 13 October 1948, both to the acting prime minister; Obrist, pp. 56-66; TNA: AIR 2/10064, E.203 High Commissioner No. 494 21 April 1949, E.289 High Commissioner No. 364 24 March 1949, E.329 Berlin Airlift Progress Report undated circa 15 February 1949; AIR 8/2607, JP(48)86 (Final) 26 July 1948, Commonwealth Relations Office telegraph to High Commissioners 22 July 1948; AIR 20/6891, High Commissioner in Canada No. 901 9 October 1948 suggested a Québécois element to Canada's position; AIR 20/6893 James 4 April 1949.

¹²⁴ Obrist, p. 60.

¹²⁵ RCAF, 'RCAF participates in the Berlin Airlift, providing West Berlin with food, medicine and essential goods' <www.rcf-arc.forces.gc.ca/v2/hst/page-eng.asp?id=901> [last accessed 11 April 2013 and since removed] stated that the RCAF participated in the Berlin Airlift. Brian Sutherland, Directorate of History and heritage, HistoryandHeritage-Histoireetpatrimoine @forces.gc.ca 18 April 2013, confirmed that this was an error that has to be corrected. Sutherland advised that: 'following the end of the Second World War several former RCAF airmen who joined the RAF did participate in OPERATION PLAINFARE.' and that 'Bridges to Berlin' by Sqn Ldr "Swanee" Swanton in the October Footnote continues on next page.

individual members of the RCAF may have done so occasionally as members of No. 24 Squadron RAF.¹²⁶

The dollar was again relevant with British hopes that the North Stars would be provided with the Canadians paying the dollar element and the British the sterling.¹²⁷ In the spring of 1949, when the Canadian Cabinet revisited the question of participation as part of an international force, it was estimated that a balanced force of 14 North Stars and 475 personnel would cost Can\$11 million in the first year. This force was expected to generate daily a minimum of three aircraft. The Cabinet discussions also implied that had Canada participated it would have preferred to have operated with the USAF not the RAF.¹²⁸ A solution suggested to the Canadian question was for support to be given by other members of NATO.¹²⁹ This would have introduced problems of using personnel for whom English was not their native language and of operating small contingents. It was unlikely to have been welcomed by the Americans for whom by then efficiency was paramount.¹³⁰ How NATO membership would have overcome the issue of which nations had the automatic right to use the corridors is unclear.¹³¹ Canadian participation had not been achieved before the blockade was lifted.

Besides personnel numbers and aircraft designs, numbers, payloads, and robustness, the RAF's performance was degraded by its maintenance policies. Pooling

1994 issue of *Airforce Magazine* recorded that: 'Several Canadian wartime aircrew had joined the Royal Air Force during 1947 after demobilization from the RCAF. at RAF Wunstorf, Germany, I met F/L Cliff Wenzell, a pilot from Ontario who later won the Air Force Cross during the Berlin Airlift.....'; this was confirmed by Peter Worthington, QMI Agency, 'Legendary military pilot, Cliff Wenzel, 89', *Toronto Sun*, 4 March 2011 <www.torontosun.com/news/columnists/peter_worthington/2011/03/04/17496746.html> [accessed 18 April 2013].

¹²⁶ Clark, *Operation Pelican*, pp. 18-20; TNA, DO 35/2470B, Harvey 19 November 1948. Station and Squadron data at TNA is unclear whether RCAF personnel with No. 24 Squadron participated.

¹²⁷ TNA, AIR 20/6893, Seal Meeting 6 April 1949.

¹²⁸ Library and Archives Canada: Record Group 2, Privy Council Office, Series A-5-a, Vol. 2643, 1949/03/22, 1949/03/29, 1949/04/12.

¹²⁹ TNA, AIR 2/10064: E.224 Rainsford 30 March 1949, E.289 High Commissioner No. 364 24 March 1949.

¹³⁰ TNA, AIR 2/10064: E.225 James 28 March 1949.

¹³¹ TNA, AIR 2/10064: E.225 James 28 March 1949.

Transport Command squadrons in Germany meant that technical tradesmen lost organization, identity and immediate supervision - critical in a predominantly conscript air force¹³² - and they serviced non-squadron aircraft and so were unaware of each one's quirks. The application of the newly conceived three wing organization to this deployed force and the retention of base servicing at the parent Transport Command stations in the United Kingdom also degraded performance. Second line servicing increased substantially yet personnel and equipment, based on establishments that were set for route flying, were deployed to Germany to augment the first line servicing and rectification teams there.¹³³

Charlesby identified a high incidence of RAF aircraft in Germany being grounded awaiting spares ['AOG']. He ascribed the inadequate stocks of spares to false economies. There is insufficient primary evidence left to substantiate his rationale. The RAF would have been criticised for holding too many spares given its relatively light commitments before the Airlift. Because of the maintenance policies employed during Operation PLAINFARE there had to be holdings in Britain and Germany. Maintaining Transport Command's routine peacetime tasks would have meant stocks were needed at route stations and terminals and in the case of the Dakota, overseas Commands. The Hastings was new into service and the Yorks had not previously operated in this way. Thus there would have been no past consumption profiles to base "establishments" on. It took time to obtain financial authority, to let contracts and to manufacture spares.¹³⁴ Finally, as Schrader recorded, spares from the USA would have had to be purchased with scarce dollars.¹³⁵

It is too easy to blame Operation PLAINFARE's maintenance difficulties on the

¹³² National servicemen were cheap labour, on short engagements, with constant turnover, limited and shallow training, and little experience. Servicing, maintenance and rectification relied heavily on supervision by "career" NCOs many of whom during Operation PLAINFARE had to be diverted to coordinating these activities across large numbers of aircraft dispersed around "foreign" airfields - *AP3257*.

¹³³ *AP3257*, pp. 7-8, 19, 41-43, 79, 81-86, 179-185; TNA, AIR 24/1806, AHQ BAFO Fs540, Technical Branch September 1948.

¹³⁴ TNA, AIR 55/102, Charlesby 21 July 1949.

¹³⁵ Helena P. Schrader, *The Blockade Breakers: the Berlin Airlift* (Stroud: The History Press, 2010) p. 52.

substantial friction between Transport Command and BAFO with AOC-in-Cs seeking to retain or grow their "empires", or technical officers seeking to exploit the establishment of technical wings on stations to increase their promotion opportunities.¹³⁶ Fundamentally the issue had two causes. The RAF was tasked to do too much with few resources.¹³⁷ For example when a major assembly became defective the Americans tended to replace it whilst the British strove to repair it thereby both consuming manpower and decreasing aircraft utilization.¹³⁸ Second, the maintenance personnel deployed from Transport Command (and other Commands) had to operate under BAFO station commanders on bases where both the technical accommodation and the local technical support were insufficient.¹³⁹

Whilst use of permanent RAF bases in England for monthly 100 hour inspections and base servicing was in many ways unproductive, it did offer two advantages over the airfields in Germany. It provided technical accommodation, especially large hangars, where aircraft could be serviced and inspected. For example, there were five hangars each at the pre-war expansion stations such as the Hastings bases at RAF Dishforth and RAF Topcliffe whilst there were two at RAF Schleswigland.¹⁴⁰ Second, there was no distraction caused by the day to day Operation PLAINFARE operations. The absence of technical accommodation also affected the Civil Lift adversely causing it to recover to Great Britain for in-depth maintenance.¹⁴¹

Charlesby studied RAF utilization and found that in the spring of 1949 a York

¹³⁶ AP3257, pp. 4, 41-45, 79--86, 179-182, 314-315, 385; TNA: AIR 2/10063, Es:160-163 Meeting 25 October 1948; AIR 2/10064, Es:335-340 DDASTO March 1949; AIR 20/6891, Walmsley: 5 November 1948 and 5, 7, 13 January 1949, Williams: 16 November and 21 December 1948; AIR 20/6892, Baker (AOC-in-C Transport Command) 26 January 1949, Walmsley 27 January 1949; AIR 20/6893, Walmsley 5 May 1949; Rainsford, *Memoirs*, p. 106.

¹³⁷ AP3257, pp. 180-182.

¹³⁸ AP3257, p. 385.

¹³⁹ AP3257, p. 314.

¹⁴⁰ AP3257, p. 41 for shortage in Germany, 225; MOD [RAF], 'Topcliffe' and 'Dishforth', *Bomber Command* <www.raf.mod.uk/bombercommand/s96.html and [s89.html](http://www.raf.mod.uk/bombercommand/s89.html)> [accessed 25 September 2012]; Brian Stanbridge, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989) p. 61.

¹⁴¹ AP3257, pp. 196, 232, 234; TNA, T 236/1026, E146 Berlin No. 493 Basic 3 February 1949.

should have made a trip to Berlin once every four hours yet on average it was doing so once every 11.5 hours and the figures for Dakotas and Hastings were poorer. RAF Airlift serviceability matched that of the Service generally but crucially its utilization was far below that of the Americans and at the end of the Blockade, the Civil Lift.¹⁴² Thus given the objective was to haul as great a tonnage as possible, not to undertake routine peacetime flying, the RAF's performance was far from spectacular.

This is not a criticism of the individual air and ground crew members. In April and May 1949, following reorganization of the RAF rotas, the daily average number of trips per aircrew became approximately the same across the fleets and the aircraft types: USAF 1.75, Civil Tudors 1.65, Yorks 1.8 and Hastings 1.6. Charlesby used these figures to observe that the lack of RAF aircrews was a serious limitation in achieving full utilisation of its aircraft.¹⁴³

Charlesby's data did not address the remainder of the Civil Lift and the RAF Dakotas, nor was there a breakdown between the two zones for the Americans. E. P. Whitfield, Manager Civil Airlift Division, provided utilization statistics. His had no aircrew data for the Lancastrians and the daily figure for a Tudor aircrew was 1.28 trips not 1.65.¹⁴⁴ The BAFO Command Statistical Officer recorded the number of aircrew in BAFO and the average daily trips per RAF aircrew. Again these are lower than Charlesby's, by nearly 20% in the case of the Hastings and 30% for the York.¹⁴⁵ These differences probably resulted from Charlesby's modifications to achieve a common baseline. Nevertheless, they imply too wide a difference to allow them to be used to fill the gaps in his figures.

Given the propensity for RAF aircraft to return from a trip requiring rectification and

¹⁴² *AP3257*, p. 355; TNA, AIR 55/98, Es:21-23. Additional discussion about British and American utilization rates: *AP3257*, App. K; TNA: AIR 55/97, 'Utilisation of British and American Aircraft'; AIR 55/99, 'Maintenance: Reports and Memoranda'; AIR 55/100 Es:12-33. The CALTF Report in *AP3257* App. G identified short-comings in RAF maintenance which reinforced Charlesby. TNA, AIR 2/10063, E.47 Cannon/Williams 22 December 1949 was critical about RAF centralized servicing.

¹⁴³ TNA, AIR 55/98, Es:22-23.

¹⁴⁴ *AP3257*, p. 252.

¹⁴⁵ *AP3257*, pp. 537-539.

thus to miss its place in the next block, it made sense to use this greater time on the ground to load more time consuming cargo.¹⁴⁶ The three RAF aircraft types needed to be ballasted when flying empty to maintain correct centres of gravity.¹⁴⁷ This made them attractive candidates to carry backloads and passengers from Berlin.¹⁴⁸ Between the beginning of January 1949 and the end of May 1949¹⁴⁹ the average backload per trip was 636.5lbs for the USAF and 1338lbs for the RAF. (Backloading on Civil Lift aircraft was minimal).¹⁵⁰ It is important to appreciate that the RAF's involvement with backloads, passengers (see Table 6.11 below) and time consuming cargoes was not the reason for its poor performance relative to the Americans - as some secondary sources appear to imply. Rather, it showed how the British made best use of their aircraft in spite of the inherent defects.¹⁵¹

Charlesby recognized that low utilization was also partly due to the aircraft scheduling system ('the block system' outlined below) that favoured the more robust Skymaster; the grounding of Dakotas in adverse weather, and the sensitivity to cross-winds of the British fleet.¹⁵² However, Charlesby's main rationale for the poor state of affairs is clear: the number of aircrews and maintenance personnel was too low; the number of unserviceable aircraft awaiting spares was too high; the aircraft

¹⁴⁶ TNA, AIR 55/98, Es:39-46 Charlesby 15 October 1948, Es:47-53 Charlesby 8 November 1948, Es:55-61 progress report undated.

¹⁴⁷ AP3257, pp. 70, 85, 175.

¹⁴⁸ AP3257, pp. 303-304; TNA: AIR 20/7812 'Backloading Policy' and AIR 38/300, 'Return Loads from Berlin' generally.

¹⁴⁹ Both figures included the part of May after the Blockade was lifted when non-priority freight could be sent by road and subsequently road and rail. The American data did not include the USN squadrons.

¹⁵⁰ AP3257, pp. 524-525, 529; *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 207.

¹⁵¹ TNA, AIR 55/98, Es:55-61 progress report undated.

¹⁵² AP3257, pp. 24, 84, 158, 355-356, 376-377, 386. Examples of the impact of cross winds are contained in TNA, FO 944/656, daily progress returns for sorties from the British Zone landing in Berlin. There were strong cross-winds on 9th April, strong cross-winds for 12 hours on 10th April, but the weather was fine on the 11th:

Date	Civil Lift	RAF	US
9 April 1949	0	0	178
10 April 1949	50	72	242
11 April 1949	93	164	295

were over-inspected and over-serviced both in Germany and in the UK; RAF aircraft were more prone to defects than the Skymaster, and too long was spent in the UK.¹⁵³ The Americans regularly flew their aircraft safely even when not fully serviceable whilst the RAF tended to ground theirs pending rectification.¹⁵⁴ To be fair, these failures in fit-to-fly and maintenance policies were not a product of BAFO, they lay within the RAF as a whole.

Maintenance in Germany benefited from the mild winter and reduced de-icing of aircraft before takeoff.¹⁵⁵ The RAF employed aircraft mobile shelters and the Americans 'work docks' to protect their staff and the aircraft during servicing. A number of them caught fire.¹⁵⁶ RAF Burtonwood was reopened on 15 November 1948 to undertake the American 200 hour inspections that had previously been done in Germany. The Americans accepted the loss of productive flying hours and aircrew availability that resulted from flying aircraft to England for their 200 hour inspections but it was not until April 1949 that throughput reached the necessary level.¹⁵⁷ The Americans were deployed at the end of a 4,000 to 6,000 mile logistics pipeline that resulted in difficulties owing to the multiple Services and Commands involved; technical manpower shortages; aircraft defects caused by intensive short haul operations, and spares shortages necessitating cannibalization which consumed more of the manpower resources. Nevertheless, with their greater experience of operating their prime aircraft type; their greater resources, and a more flexible approach, these issues were overcome to a far greater degree.¹⁵⁸

An example of American flexibility was the employment of ex-Luftwaffe aircraft mechanics with its inherent risks and the resources consumed in cross-training,

¹⁵³ Summarized at *AP3257*, pp. 355, 386-387.

¹⁵⁴ *AP3257*, p. 385.

¹⁵⁵ *AP3257*, pp. 24, 295, 391.

¹⁵⁶ AFHRA, IRISNUM 240604, photographs at Oberpfaffenhofen AFB; *AP3257*, pp. 186, 313, photographs preceding p. 461; TNA, AIR 28/1108, January 1949 'Technical'.

¹⁵⁷ *AP3257*, pp. 309-310.

¹⁵⁸ AFHRA, IRISNUM 198189, 'History 1965th AACS' 18 September 1948-31 May 1949; IRISNUM 1038214, Grier (Base Aircraft Maintenance Officer) dated 20 May 1949; *AP3257*, pp. 308-314, 316-318; Anon, 'A special study of Operation "Vittles"', pp. 53-119; *Berlin Airlift: A USAFE Summary*, pp. 74-103, 116; LoC, Vandenberg Papers: Container 59, Symington (via Air Attaché London) No. 74388 27 December 1948.

language and supervision. Nevertheless, by the end of the Airlift they were established at 80 per USAF squadron. The RAF, with major problems resourcing aircraft maintenance, used locally engaged labour only for 'non-skilled' tasks.¹⁵⁹ It is worth noting that in spite of the views recorded above that the RAF over-inspected their aircraft, the short flights necessitated the Americans undertaking a limited number of activities on a 100 hour basis, such as changing crank case oil.¹⁶⁰

AP3257 acknowledged that there had been:

17. A most marked difference between the aircraft utilisation of the USAF and RAF was observed during the Airlift. During the period May-July 1949, one USAF Wing of 40 C-54 aircraft (lifting 9.9 tons) was lifting a greater daily average tonnage than the whole of the RAF transport force, consisting of approximately 100 aircraft and based at three stations. In spite of the greater U.S. manpower backing, it appears that the overall cost of operating three stations with 100 aircraft [of three types] and the necessary headquarters is much higher in proportion to the cost of one station operating 40 aircraft.

18. It is felt that this is a most important problem which should be very carefully studied. The reasons for the disparity appear to be many, and are primarily:-

- (a) Better design and reliability of aircraft.
- (b) More flexible system of servicing.
- (c) Better manpower backing.¹⁶¹

The domestic accommodation in Germany was inadequate too. Air Staff at HQ BAFO observed that Airlift aircrew needed to be: 'treated more as officers and less like lorry drivers' and RAF physician Group Captain R. H. Stanbridge expressed concern about fatigue being caused by commissioned and non-commissioned aircrew accommodation. If it was poor for officer aircrew, then it would have been

¹⁵⁹ AP3257, pp. 60, 286; *Berlin Airlift: A USAFE Summary*, pp. 134-136. Miller was unable to find definite figures for the total of German mechanics employed by the Americans on both scheduled and non-scheduled maintenance. He quotes his sources as also recording that the French had employed them. He speculated that the British may have used some under the guise of 'aircraft cleaners' - Roger G. Miller, 'Any Problems, Tunner?', Helmut Trotnow, and Bernd von Kostka, coordinators, *Die Berliner Luftbrücke – Ereignis und Erinnerung* (Berlin: Frank and Timme, 2010) pp. 78-84 (quotation p. 84).

¹⁶⁰ AP3257, p. 310.

¹⁶¹ AP3257, p. 24.

worse for the national service aircraftman trade assistants.¹⁶²

In 1948 the British had to play the hand they had been dealt at the war's end which included a small transport fleet of aircraft which were inappropriate to the Airlift's needs. The situation was not helped by the different agendas of BAFO and Transport Command. However, as the *AP3257* quotation above said¹⁶³, and the thesis shows, Britain may not have spent its money in the most efficient way prior to and during the Airlift resulting in the lack of aircrews and maintenance personnel. Moreover, it had opted for replacement transport aircraft, the Handley Page Hastings and the Vickers Valetta, whose designs looked backwards rather than forwards.

AIRFIELDS AND CORRIDORS

The Airlift needed adequate numbers of airfields able to operate under most weather conditions 24 hours per day and to handle intensive aircraft traffic; the various aircraft types being operated (including aircraft diversions), and the ground operations. Table 5.8 lists the airfields that were used, excluding the 1948 flying boat bases.¹⁶⁴

<u>Berlin</u>	<u>Northern Zone</u>	<u>US Zone</u>
RAF Gatow	RAF Buckeburg (P.19 flights)	Rhein-Main AFB
Tegel	RAF Celle	Wiesbaden AFB
Tempelhof	RAF Fassberg	
	Fuhlsbuttel (Civilian managed)	
	RAF Lubeck	
	RAF Schleswigland	
	RAF Wunstorf	

Table 5.8: Airlift Airfields

¹⁶² Anon, 'The Airmen's Charter', *Flight*, 3 August 1950; *AP3257*, App. Q; Rainsford, *Memoirs*, pp. 106-107; TNA, AIR 55/218, E189-190 Air Staff unsigned 13 January 1949 (for quotation).

¹⁶³ *AP3257*, p. 24.

¹⁶⁴ *AP3257*, pp. 150-152, 323-327, 522-523, 526.

As the German airfields and the air corridors are referred to regularly in Chapters 5 and 6, a Map at Appendix 5 displays their locations. It includes the airfields that were used, plus RAF Buckeburg, the 1948 flying boat bases, and RAF Luneburg.

All the Operations VITTLES and PLAINFARE airfields had hardened (concrete or asphalt) runways and most had hardened perimeter tracks and aircraft loading areas, although some used pieced steel plank or both.¹⁶⁵ The CALTF Report mentioned an additional 'base under construction'¹⁶⁶ at the end of the blockade which was probably RAF Luneburg that was being developed as another Skymaster airfield and was planned to be ready in either August or September 1949.¹⁶⁷ In September 1948 Major General Edwin Herbert, GOC British Troops Berlin, had suggested to the British Military Governor 'the opening of a new airlift airfield, say at Luneburg, before the frost comes' yet on 18 January 1949 Williams reported it was 'being considered'.¹⁶⁸ There appears to have been a lack of urgency upgrading RAF Luneburg when compared with Tegel or RAF Celle. Completion was targeted for 1 September 1949 but that slipped to the 31 December 1949 by the time the project was terminated.¹⁶⁹

The intention initially was to enhance RAF Luneburg to allow 60 US Skymasters to be based there and this led to delays whilst positioning of the taxi ways and hard standings were argued over between the RAF and the USAF. Progress would not have been improved by Group Captain Operations at BAFO's proposal to base 60 Hastings

¹⁶⁵ Anon, 'A special study of Operation "Vittles"', p. 54; AP3257, pp. 262-268, 323-7.

¹⁶⁶ AP3257, p. 286; TNA, PREM 8/990, Es:5-7 DO(49)6 Cabinet Defence Committee note by the Minister of Defence dated 28 January 1949, Es:10-13 Hollis 20 January 1949.

¹⁶⁷ AP3257, p. 16; Daniel F. Harrington, *The Air Force Can Deliver Anything: A History of the Berlin Airlift* (Ramstein AFB: USAFE History Office, 1998) p. 92; TNA: AIR 2/10063, Es:21-26 Meeting 18 January 1949, Es:45-48 Cannon/Williams Appreciation 22 December 1948 - an additional 30 C-54 airfield in the British Zone, E.54 FO(German Section) 173 Basic 5 January 1949, E.61 Berlin 37 5 January 1949; AIR 20/2071 Berlin 197 Basic 15 January 1949 (also AIR 2/10063, E34); AIR 20/6892 Williams 26 February 1949; AIR 20/7148, BAFO AX559 28 January 1949; AIR 28/1070 - RAF Luneburg did not open as RAF station until 26 July 1949. TNA, AIR 20/6892, Cannon/Williams 14 February 1949 - a new base in the Fassberg/Celle area necessary but as a standby rather than a permanent base for heavy transports. This was probably RAF Luneburg although AX559 on 28 January 1949 described its future as a full scale PLAINFARE base.

¹⁶⁸ TNA: AIR 2/10063, Es:21-26 Meeting 19 January 1949; AIR 20/7804, E.39, Herbert 2 September 1948.

¹⁶⁹ AP3257, pp. 265-266; Lay, 'Berlin Airlift Part 1', pp. 26, 38-40; TNA, FO 1030/62, HQ BAFO O.66 7 July 1949 reported development had ceased.

there.¹⁷⁰ At the end of the Airlift work was also in hand to enlarge all the Northern Zone Airlift military airfields to operate 60 heavy aircraft; to build a third runway at RAF Gatow, and was about to start at Fuhlsbittel to provide more local domestic accommodation and hard standings to park 40 twin-engine aircraft.¹⁷¹ Given time and the appropriate priority, the American Army, the Royal Engineers and the RAF Airfield Construction Branch, with support from German contractors and labour, could upgrade and even build new airfields, as happened for example at RAF Celle and Tegel.¹⁷²

<u>Airfield</u>	<u>To Frohnau</u>	<u>Return from Berlin</u>	<u>Total</u>
Nautical miles			
RAF Buckeburg	188	145 from Gatow	333
RAF Celle	134	122 from Gatow	256
RAF Fassberg	119	125 from Tegel	244
Fuhlsbittel	139	146 from Tegel	285
RAF Lubeck	125	176 from Gatow	301
RAF Schleswigland	206	186 from Tegel	392
RAF Wunstorf	174	139 from Gatow	313
	<u>To Berlin</u>	<u>Return from Berlin</u>	<u>Total</u>
Wiesbaden AFB	244	292	536
Rhein-Main AFB	232	292	524

Table 5.9: Distances to and from Berlin¹⁷³

¹⁷⁰ TNA: AIR 2/10063, E.61 Berlin 37 5 January 1949; AIR 55/218 Es:115-128 Meeting 24 March 1949.

¹⁷¹ AP3257, pp. 16, 152, 563; TNA: AIR 24/1807, April 1949, Part 1 'Air Staff' and 'Air Staff Summary'; AIR 25/1273, App. 96; AIR 55/218 Es:115-128 Meeting 24 March 1949; T 236/1026, E.267 Lubbecke No. 3150 Basic 25 March 1949 gave a target of 60 aircraft at Fuhlsbittel in 3 phases for completion by December 1949. TNA, AIR 2/10064, Es:172-178 Williams 21 April 1949 for American VHT proposal including RAF Celle, RAF Gatow and RAF Fassberg.

¹⁷² AP3257, pp. 261-268; John Fox, Sqn Ldr Airfield Construction Branch (Rtd), 'Cold War Warm Climes' part of the 'Support of Air Operations' Symposium, *Royal Air Force Historical Society Journal*, No. 51 (Witney: Windrush, 2011); Lay, 'The Berlin Airlift: Part 1', pp. 36-40; Lay, 'The Berlin Airlift: Part 2', pp. 39-41, 92-98; TNA: AIR 26/596, ORB No. 5357 Airfield Construction Wing, July 1948 - May 1949 inclusive; AIR 28/1034, ORB RAF Gatow, July 1948 - May 1949 inclusive; WO 106/5909, RE Report on Operation Plainfare.

¹⁷³ AP3257, pp. 336-341 covered all but Rhein-Main and Wiesbaden. The AP3257 source for Table 5.9 used the Frohnau beacon which was 14.4 nm from Gatow. No distance has Footnote continues on next page.

The distance for the round trip to Berlin impacted on potential tonnage hauled daily. As Table 5.9 shows, the Northern Zone bases were nearer to Berlin than were those in the Southern Zone. They were also closer to the north German ports where cargo and aviation gasoline [AVGAS] were imported.

<u>Airfield</u>	<u>Nautical miles</u>	<u>Bearing</u>	<u>Notes</u>
RAF Buckeburg	55	SW	P.19 base
RAF Celle	20	198°	
Fuhlsbittel	43	350°	
RAF Fassberg	0	0	
RAF Gutersloh	91	SW	See below
Lohausen	159	SW	
RAF Lubeck	56	19°	
RAF Luneburg	21	25°	Under development
RAF Schleswigland	95	NNW	
RAF Wunstorf	39	SW	
RAF Uetersen	47	NNW	See below

Table 5.10: Distance and Bearing from RAF Fassberg of Northern Zone Airfields

Table 5.10 identifies the locations of the Northern Zone airfields in terms of their relationship to RAF Fassberg.¹⁷⁴ It includes airfields that were considered but not used when the Blockade ended. RAF Gutersloh¹⁷⁵ and RAF Wunstorf were

been found from Frohnau to Tegel but it appears slightly less than Frohnau to Gatow. TNA, AIR 20/7805, Dangerfield 7 September 1949 - cites 'Luneburg to Gatow at about 125 statute miles' but figures may not allow for routing. The distances for Rhein-Main and Wiesbaden came from *USAF Statistical Digest Jan 1949 - Jun 1950*, p. 400. They are to 'Berlin' and have been converted to nautical miles from statute miles.

¹⁷⁴ Airfields:<www.ourairports.com/airports/EDDH, [/EDDL](http://www.ourairports.com/airports/EDDL), [/EDHE](http://www.ourairports.com/airports/EDHE), [/EDHG](http://www.ourairports.com/airports/EDHG), [/EDHL](http://www.ourairports.com/airports/EDHL), [/ETHB](http://www.ourairports.com/airports/ETHB), [/ETHC](http://www.ourairports.com/airports/ETHC), [/ETHS](http://www.ourairports.com/airports/ETHS), [/ETNS](http://www.ourairports.com/airports/ETNS), [/ETNW](http://www.ourairports.com/airports/ETNW) and [/ETUO](http://www.ourairports.com/airports/ETUO); www.fallingrain.com/icao/ETHS and [EDHE](http://www.fallingrain.com/icao/EDHE)> [accessed 27 and 29 July 2011].

¹⁷⁵ Tony Fairbairn, *Action Stations Overseas* (Sparkford: Patrick Stephens Ltd, 1991) pp. 79-80.

proposed to the Americans but RAF Fassberg was chosen.¹⁷⁶ Fuhlsbittel was a BAFO reserve airfield and was intended as Hamburg's civil airport.¹⁷⁷ The Americans were offered it but declined because of inadequate accommodation and its unsuitability for heavy aircraft.¹⁷⁸ Had it been selected, the Civil Lift there would presumably have moved to RAF Uetersen along with the 'international civil aircraft'. This airfield was 10 nautical miles west of Fuhlsbittel and was typical of World War II Luftwaffe airfields. Major civil engineering upgrades would have been needed to make it an Airlift base.¹⁷⁹ There was also an ex-Luftwaffe base at Stade which was 17 nautical miles west south west of Fuhlsbittel.¹⁸⁰ Another potential base was Lohausen (Dusseldorf) civil airport where civil engineering enhancements were completed in April 1949 with considerable RAF help. The BAFO Operation Record Book [ORB] stressed it was not an Airlift base. However, it was close to the Ruhr coalfields and the Duisburg bagging facility and might have served as a base from which to carry Ruhr coal directly to Berlin if the Blockade had continued.¹⁸¹

Routes were determined by having to use the three authorised corridors (Appendix 5) and the flight paths imposed by HQ CALTF (Figure 5.3 below). For an example of the impact of the latter, RAF Celle, RAF Fassberg and RAF Wunstorf were near to each other (Table 5.10) but the British had to take a longer route to the northern corridor than the Americans (Table 5.9) to avoid the airspace around the two USAF

¹⁷⁶ Miller, *To Save a City* (Texas A&M) pp. 61, 72; TNA: AIR 28/1039, RAF Gutersloh; AIR 28/1163, RAF Wunstorf.

¹⁷⁷ TNA, AIR 24/1806, AHQ BAFO Fs540, Air Staff, September 1948.

¹⁷⁸ TNA, AIR 2/10063, E.21 Meeting 18 January 1949, E.54 FO(German Section) 173 Basic 5 January 1949, E.61 Berlin 37 5 January 1949, E.67 BAFO AX523 16 December 1948.

¹⁷⁹ TNA: AIR 2/10063, E.67 BAFO AX523 16 December 1948, E.75 Cox 15 December 1948; AIR 24/1806, Air Staff, April 1948.

¹⁸⁰ <www.ourairports.com/airports/EDHS> [accessed 6 August 2012]. RAF Gutersloh had a 6,000 foot concrete runway and a 5,100 foot PSP one, RAF Uetersen a 4,500 foot PSP one, and Stade with a 3,900 foot 'tarmac' runway - Anon, 'A special study of Operation "Vittles"', p. 54; TNA, AIR 20/7805, E.31 unsigned note.

¹⁸¹ TNA: AIR 20/7820, E.109 HAMGOV CAB151 31 January 1949, E.110 HAMGOV 331 Basic 14 February 1949; AIR 24/1807, April 1949, Part 1 Air Staff Summary, p. 2.

bases.¹⁸²

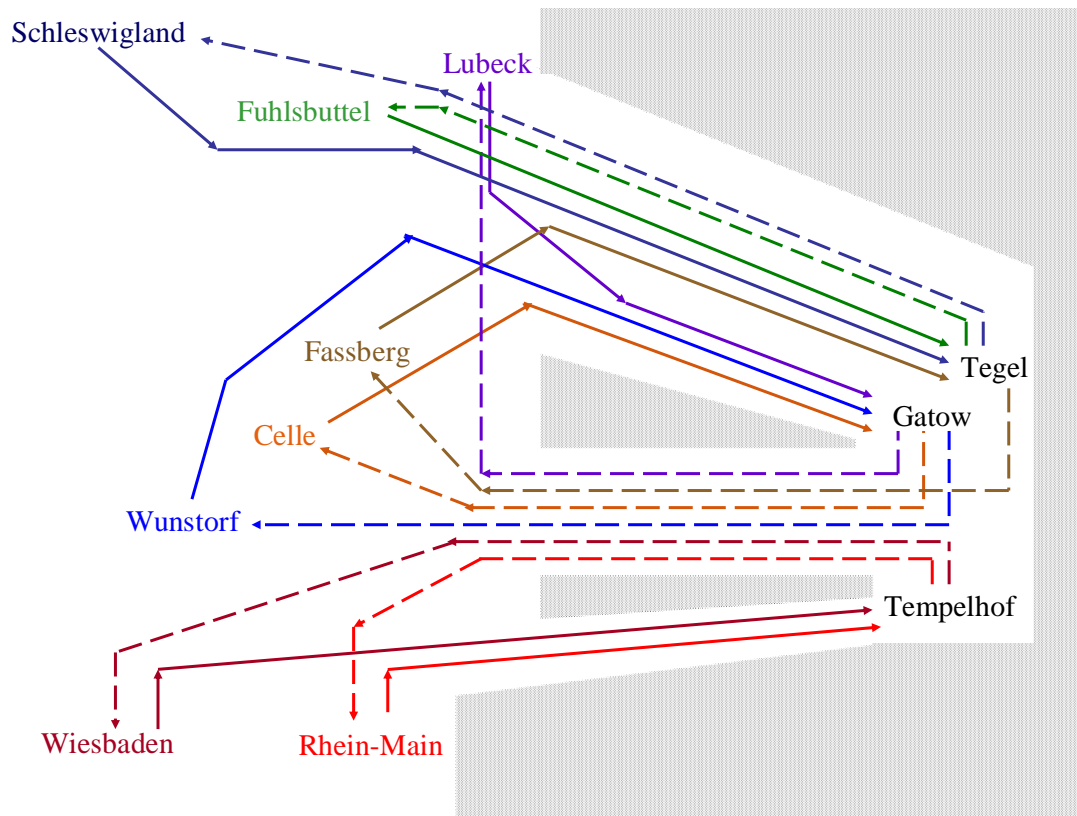


Figure 5.3: Airlift Routes 1949

Airfields were meaningless without aircraft and vice versa and Table 5.11 brings the two together by giving the number of aircraft directly engaged in Operations VITTLES and PLAINFARE at three relevant points, in February 1949, at the end of the Airlift, and from an appraisal of capability undertaken in February 1949 for the long term Airlift.¹⁸³

¹⁸² AP3257, pp. 21, 165-166, 286, 335-340; Miller, *To Save a City* (Texas A&M) p. 37; Bill Odell and Bill Von Sennet, '[Index for simulator flights] Berlin Airlift', *Microsoft FS98 and FS2000* <www.billvons.com/bal/flights> [accessed 8 July 2011].

¹⁸³ AP3257, p. 152 from the No. 46 Group Report for Northern Zone airfields, p. 277 'Phase out' started on 1 August 1949, p. 286 from the CALTF Report for Southern Zone ones; TNA: AIR 2/10063, E.61 Berlin 37 5 January 1949; AIR 20/6892, Cannon/Williams 14 February 1949, Williams 26 February 1949. Figures at AP3257, p. 286 also included those for the Northern Zone. The major difference was for RAF Fassberg where 58 C-54s were listed. *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 207 gave the July 1949 monthly average as 50.

<u>Airfield</u>	<u>Northern Zone at 1 July 1949; Southern Zone Immediately prior to 1 August 1949</u>	<u>14 February 1949 Appraisal</u>	
		<u>Strength February 1949</u>	<u>Potential Strength</u>
RAF Celle	42 Douglas C-54	40	40 Suggested increase to 54
RAF Fassberg	46 C-54s	60	66
Fuhlsbittel (civilian managed)	10 Handley Page Halifaxes 7 Avro Lancastrians	16	16 BAFO considered expansion to a full scale PLAINFARE airfield
RAF Lubeck	42 Douglas Dakotas	54	50 C-54s (assumed to be the loaned ones)
Rhein-Main AFB	95 C-54s	96	96
RAF Schleswigland	23 Handley Page Hastings 11 Handley Page Halifaxes 2 Consolidated Liberators	24	60
Wiesbaden AFB	26 C-54s + 5 C-82s	29	23
RAF Wunstorf	40 Avro Yorks 4 Lancastrians 5 Avro Tudors 1 Avro Lincoln ¹⁸⁴	58	60

Table 5.11: Aircraft Distribution during the Blockade

Traffic between the west and Berlin was limited to three air corridors. Each was 20 miles wide with - subject to disagreement - a ceiling of 10,000 feet.¹⁸⁵ In December 1948 the Southern Zone operated Skymasters and a handful of C-82s¹⁸⁶ whilst the

¹⁸⁴ The Avro Lincoln was a 4-engine converted bomber on trial after Blockade was lifted.

¹⁸⁵ AP3257, pp. 20, 217.

¹⁸⁶ AP3257, p. 15; USAF Statistical Digest Jan 1949 - Jun 1950, Table 207.

Northern Zone had 11 different aircraft types.¹⁸⁷ Aircraft routing and control systems had to be developed to cope with a theoretical saturation point in good weather of one landing every three minutes with equivalent rates for take-offs at each of the three Berlin airfields¹⁸⁸; different navigation techniques and aids (and for parts of the Civil Lift, lack of aids¹⁸⁹)¹⁹⁰; the absence of navigators and exact positioning avionics on board C-54s (hence their inability to maintain precise separation throughout the flight)¹⁹¹; different aircraft cruising speeds leading to six standard cruising speed groupings in the Northern Zone¹⁹², and the absence of de-icing capabilities on some civil aircraft requiring them to operate at lower altitudes¹⁹³. Moreover, the systems had to operate in good visibility and poor, day and night.¹⁹⁴ Bad weather, which rarely affected the whole area of operations¹⁹⁵; the number of serviceable aircraft; the availability of aircrews; loads and turn round times, and airfield maintenance especially in Berlin¹⁹⁶ could lower peak capacity and introduce different pinch points into the system.¹⁹⁷

In the specially orchestrated Easter Parade during the 15-16 April 1949 24 hour recording period 1,398 sorties landed in Berlin having been despatched via the northern and southern corridors. The northern one handled 883 inbound flights.¹⁹⁸

¹⁸⁷ AP3257, pp. 14, 157, 243; TNA: AIR 2/10063, E.50 App. B to Cannon/Williams 22 December 1948; AIR 2/10064, Es:172-178 Williams 21 April 1949.

¹⁸⁸ AP3257, pp. 23, 28 (acceptance rates one every two minutes were achieved where two runways were in use), 157, 217, 292; Tunner, p. 174.

¹⁸⁹ AP3257, pp. 195, 225.

¹⁹⁰ AP3257, pp. 15, 157, 165-167.

¹⁹¹ AP3257, pp. 23, 27-28, 165-155, 217, 220, 288-289; *Berlin Airlift: A USAFE Summary*, p. 8; TNA, AIR 55/98, E.59 part of progress report undated.

¹⁹² AP3257, pp. 165-166, 338-341 (Speed groupings east: 160/148/125 knots and west: 180/157/135 knots). TNA, AIR 2/10063, Es:51-52 App. C to 22 December 1948 indicates that the flying boats flew at 145 knots in both directions.

¹⁹³ AP3257, pp. 24, 157, 195, 224, 230.

¹⁹⁴ AP3257, pp. 24-25, 31, 166, 219.

¹⁹⁵ AP3257, p. 167; TNA, AIR 2/10063, E.46 Cannon/Williams 22 December 1948.

¹⁹⁶ Fox, 'Cold War Warm Climes'; TNA, AIR 20/6892, Cannon/Williams Appraisal 14 February 1949

¹⁹⁷ The points contained in this paragraph were reinforced by Charlesby's research in TNA: AIR 55/98, AIR 55/99, AIR 55/100, AIR 55/102 and AP3257, App. K.

¹⁹⁸ AP3257, pp. 148, 292; TNA, AIR 8/1649, HQ No. 46 Gp. AO398 16 April 1949.

Precise figures for the return flights are not certain. The majority of aircraft would have returned via the central corridor but a few aircraft may have remained in Berlin temporarily and those for Fuhlsbuttelt and RAF Schleswigland would, in accordance with standard operating procedures [SOPs], have returned via the northern one. It can be estimated using a number of sources that about 1,330 returned via the central one with circa 65 returning via the northern one.¹⁹⁹

The variety of aircraft and number of airfields in the Northern Zone led to a system whereby each airfield was allocated a period during which its aircraft could take off. Initially each 'block' reoccurred every four hours but over time it became a two hourly cycle which was designed to suit the British better. Finally an hourly despatch cycle was introduced for RAF Celle, RAF Fassberg and RAF Wunstorf.²⁰⁰ There was horizontal separation between aircraft and between blocks which were also separated vertically. Different altitudes were assigned to each despatching airfield.²⁰¹ The Southern [American] Zone also used a four hourly block initially but then moved to the more efficient system of continuous flow.²⁰²

As the Airlift evolved, aircraft in the Northern Zone were routed to Berlin through the northern corridor and returned along the central one.²⁰³ Southern Zone traffic used the southern corridor into Berlin and returned via the central one.²⁰⁴ From January 1949 Fuhlsbuttelt and RAF Schleswigland aircraft returned along the northern corridor to reduce flight time.²⁰⁵ The RAF would have preferred to have employed continuous flow and two-way traffic flows in all the corridors relying on separation by position and height because as Table 5.9 showed this would have been

¹⁹⁹ TNA: AIR 8/1649, HQ No. 46 Gp. AO398 16 April 1949; AIR 20/2071, Whitfield 16 May 1949; AIR 28/1108, ORB RAF Schleswigland 15 April 1949; AIR 28/1163, ORB RAF Wunstorf 16 April 1949; AIR 55/109, AATO 1-30 April 1949.

²⁰⁰ AP3257, pp. 23, 156; D. J. Sutton, Brig. ed.-in-chief, *The Story of the Royal Army Service Corps and Royal Corps of Transport 1945-1982* (London: Leo Cooper, 1984) p. 106.

²⁰¹ AP3257, pp. 23, 165, 219, 335 recorded that safety gap time separation between blocks applied only to either side of American ones.

²⁰² AP3257, pp. 291-292.

²⁰³ AP3257, pp. 23, 291-292.

²⁰⁴ AP3257, pp. 23, 291-292.

²⁰⁵ AP3257, pp. 230, 292.

shorter, reducing for example the round trip for RAF Wunstorf by 39 nautical miles.²⁰⁶ However, the avionics fitted to American aircraft and their lack of a navigator prevented this becoming a general practice across the Airlift.²⁰⁷

Airlift aircraft had also to be separated from Soviet ones using their seven airfield circuits in the Berlin Air Safety Zone. Three of these were either immediately adjacent to or intersected those of Tegel, Tempelhof or RAF Gatow.²⁰⁸ No accidents occurred but inevitably there were incidents, as wonderfully recorded in a Berlin Military Governor signal: 'A number of Soviet aircraft which were probably preparing to land at Dallgow this afternoon slightly infringed the Gatow control zone.....A formal protest was made to the Russians in the Air Safety Centre but we are on weak ground, since our aircraft infringe the Dallgow zone up to 70 times per day.'²⁰⁹ In Berlin all the runways had the same bearing unlike the typical triangle layout employed in the UK by the RAF.²¹⁰ This may have been why the British continued to design aircraft with a tail wheel even though they were far more susceptible to cross winds than aircraft like the Skymaster with a nose wheel.²¹¹ RAF Lubeck was two miles west of the Eastern Zone and instrument approaches from that direction meant flying over Soviet occupied territory. There were three fatal crashes on the approach to the airfield. All were in bad weather and occurred over the Eastern Zone.²¹²

²⁰⁶ AP3257, pp. 156; TNA, PREM 8/990, DO 49(6) 28 January 1949: 'a continuous stream, instead of the "time block" system', might make better use of aircraft'.

²⁰⁷ The Americans were aware of the inefficiencies in the traffic patterns. When considering a smaller airbridge, divided into a $\frac{2}{3}$ rd American and $\frac{1}{3}$ rd British commitment, with lower traffic densities they proposed that aircraft from the Southern Zone should fly into Berlin along the southern corridor and return along the central one; American aircraft from Celle and Fassberg should use the northern corridor in both directions and British aircraft should use the central one in both directions - TNA, AIR 38/301, HQ CALTF Plans Division paper 25 June 1949 'Requirements to Lift 3500 tons to Berlin Daily'.

²⁰⁸ AP3257, pp. opposite 28, 217.

²⁰⁹ TNA, T236/1025, Berlin Military Governor No. 1848 9 September 1948.

²¹⁰ AP3257, p. 219.

²¹¹ AP3257, pp. 80, 217, 293; MOD, airfield layout examples: RAF Dishforth, RAF Topcliffe, RAF Waterbeach <www.raf.mod.uk/bombercommand/s89.html, ... /s96.html ... /s49.html> [all accessed 16 September 2012].

²¹² AP3257, pp. 34-5 151, 165, 324; TNA: AIR 15/815, 'Load Bearing Tests' [LCN] Appendix A to CC/TS2295/15/Plans 10 April 1949; AIR 20/6892, Cannon/Williams Footnote continues on next page.

FREIGHT HANDLING

The block system inherently led to bunching of aircraft take-offs at the start of each time period. Loading (and maintenance) had to be managed carefully to ensure that when slots became available they were not wasted.²¹³ Aircraft arrivals at the airfields in Berlin had to avoid surges followed by troughs.²¹⁴ These made inefficient use of resources and the peaks could delay turn rounds. Quick turn rounds were imperative because they minimised the time for the round trip and helped to ensure that more aircraft would be ready for the next block.²¹⁵ They may also have helped the case to improve block frequency. Essentially, the quicker the turn round the more trips possible in a day and so the greater the tonnage delivered.

Load planning and assembly differed between airfields. In April 1949, for example, RAF Fassberg concentrated on coal, a single cargo for every aircraft, ten tons of bagged coal. At close by RAF Wunstorf dry lift cargoes -mail, food, and commodities for the British occupation in Berlin and for airfield maintenance - had to be readily available to be quickly handled, stowed, trimmed and secured for military Yorks with freight doors, ones with passenger doors and civilian Yorks with different tonnage limitations as well as diesel, gasoline and kerosene for Lancastrians, Liberators and Tudors with differing capabilities and capacities.²¹⁶

Quick loading and offloading required adequate numbers of warehouses to store the cargoes and at consignor airfields to pre-prepare standard aircraft loads. Vehicles were needed to haul the freight to and from the aircraft. Trained personnel had to prepare consignments; to load lorries and trailers, and then to reload the freight onto the aircraft, stowing it safely and securely, and at the destination, to reverse the process. These activities had to conform to tried and effective SOPs and not to be

Appraisal 14 February 1949; AIR 20/7804, Dugmore 22 September 1948 envisaged 40 four-engine aircraft at RAF Lubeck.

²¹³ AP3257, pp. 156-157.

²¹⁴ AP3257, p. 291.

²¹⁵ AP3257, pp. 156-157, 301-308.

²¹⁶ AP3257, pp. 67, 521, 523, 573. RAF Wunstorf also consigned coal - Paul R. Wood, 'Berlin Airlift Reconsidered: Problems and Success', *Air Clues*, Vol. 41, No. 7, July 1987, p. 268.

the random genius or otherwise of each individual or team. They had to be achieved without damaging the inherently fragile aircraft. Much paperwork was involved (consignment notes, trim sheets, truck documentation, labour returns for locally hired civilians, and "stats returns").²¹⁷

It should have been the moment of glory for those in the RAF responsible for aircraft loading and unloading, the air movements personnel, for as Michael Donley, Secretary of the [US] Air Force, said during a veterans Diamond Jubilee reception and dinner: 'the success of the Berlin Airlift also relied on the herculean efforts of allied airmen, who provided game-changing innovations like: mixing aircraft loads of differing densities to maximize tonnage - for example, mixing items like pasta, which weighed little but took up space, with sugar, which was the opposite....'²¹⁸ Why then during a symposium on the history of RAF Supply and Movements in 2005 was the Berlin Airlift covered in a few lines of trivia?²¹⁹

The air movements organization, training, the experience of the officers, and the acute shortage of personnel were highly criticized in AP3257, RAF Wunstorf's ORB, and Group Captain A. J. Biggar's 13 July 1948 report. The Air Publication recorded: 'In the early stages of the operation the RAF air movements organisation was very inefficient owing to an acute shortage of personnel and lack of training for the type of work that the available personnel were called upon to do.'²²⁰

In May 1948 Transport Command had carried 5,972 passengers on an average journey of 1,342 miles and hauled 747.6 long tons of freight and 86.2 of mail with the average ton of freight travelling 894 miles.²²¹ The senior officer specializing in

²¹⁷ AP3257, pp. 68-69, 85-86, 157-158, 173-175, 301-308, 557-572, 586-587; TNA, AIR 24/2047, 'Responsibilities in respect of the safe loading of aircraft', Transport Command Air Staff Instruction, Vol. 1, No. 2.

²¹⁸ Michael Donley, Secretary of the [US] Air Force, remarks at the Berlin Airlift Veterans Diamond Jubilee reception and dinner, Washington DC, 8 November 2009 <www.af.mil/information/speeches/speech.asp> [accessed 6 July 2011].

²¹⁹ Duncan Grant, Gp Capt (Rtd), 'Movements and the Supply Branch' part of the 'Supply - an Airpower Enabler' Symposium, *The Journal of the Royal Air Force Historical Society*, No. 35 (Abingdon: Advance Book Printing, 2005) p. 82.

²²⁰ AP3257, pp. 68 (for quotation), 121, 173-5; TNA, AIR28/1163, 7 July 1948 and in Appendices: BAHQ(M)/104/RAF 13 July 1948, p. 2.

²²¹ TNA, AIR 24/2046, 'Transport Command Statistical Summary May 1948'.

movements at Headquarters Transport Command in June 1948 was a relatively lowly wing commander from the Secretarial Branch who had previously been aircrew.²²² The Air Ministry Directorate of Movements covered air and surface movements. The air commodore and his group captains and wing commanders all came from the Equipment Branch but below that level, the officers' backgrounds were mixed.²²³

Two thirds of the first edition of the RAF's *Manual of Movements* was dedicated to surface movements.²²⁴ Thus the adverse comments are not surprising. The specialism was unprepared for a large intensive operation like the Berlin Airlift. It was subject to the same financial constraints as the rest of the RAF's "tail"; was few in numbers and was "brevetless" in an environment where being or having been a pilot counted for much. In a peace time Air Force prior to Operation PLAINFARE, which seemed to consider Imphal and Burma to be an aberration, there was neither motivation nor justification for Transport Command to demand broader training and larger establishments or to practice large airbridge-type operations. Brigadier (Rtd) R. C. Crowdy, in front of an audience of academics and retired RAF personnel, reinforced this explanation for the performance of RAF air movements:

I do believe that at the higher echelons of command it would be much simpler if the loading and off loading of aircraft was not done by the Army but was done by the RAF, because you are then under one centralised control. The reasons I understand it has not been possible in the past is a question of distribution of manpower, it's as simple as that, but I'm sure it would make the higher command very much easier to control where the loading and off loading were entirely in the hands of the RAF.²²⁵

The RAF's attempts thereafter to resolve the lack of air movements staff during the Airlift left much to be desired. In June and July Transport Command loaned 22

²²² TNA, AIR 24/2046, Minutes of the AOC-in-C's Staff Conference 28 June 1948.

²²³ AM, *The Air Force List*, various, 1948-1949.

²²⁴ AM, AP3150: *Royal Air Force Manual of Movements*, 1st edn., 1948.

²²⁵ R. C. Crowdy, Brig (Rtd) 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989, p. 81. [Also recorded as Crowley in proceedings]. For spelling of his name, see HMG. Third Supplement to *The London Gazette* No. 42998 of 11th May 1963 (published Tuesday 21 May 1963). He participated in the Airlift as a Lt Col within AATO - Sutton, p. 108.

officers and 68 airmen to BAFO from its air movement staff.²²⁶ At the 6 September 1948 AOC-in-C Transport Command's Staff Conference it was reported that the Transport Command's air movement assistants manning level was 60% and would fall to 39% at the end of October with forthcoming releases from service.²²⁷

Solutions were considered during Staff Conferences. Use of Transport Command's air quartermasters raised questions about their status as non-aircrew members of aircraft crews.²²⁸ No. 47 Group's Polish pilots, who could not be used on the Airlift because they were not yet naturalized²²⁹ and Glider Regiment Pilots were employed²³⁰. There was concern about the morale of 47 Group's 100 second pilots employed on 'extraneous ground duties'.²³¹ Thirty eight air movements personnel were transferred from the Middle East in December 1948.²³² By February 1949, after 45 had been assigned to BAFO, lack of staff at route stations entered the agenda under 'Air Movements Problems'.²³³ Nevertheless, despite the need, air movements training had been closed down in October 1948 (as instructors were detached to BAFO) and routine courses did not restart until January 1949. By Mid-January 106 NCOs had volunteered for training. There was parallel confusion about the future need to train officers.²³⁴

The Army had the necessary manpower and a broad range of skills if not air

²²⁶ TNA: AIR 24/2046, HQ TC RAF Fs540 24-30 June 1948; AIR 24/2047, RAF F540 31 July 1948.

²²⁷ TNA: AIR 24/2047, Minutes AOC-in-C Staff Conferences 6 and 20 September 1948; AIR 24/2048, Minutes AOC-in-C Staff Conferences 4 October 1948. Included shortages at RAF Abingdon and technical staff loading aircraft.

²²⁸ TNA, AIR 24/2047, AOC-in-C Staff Conference 6 September 1948.

²²⁹ TNA, AIR 24/2048, AOC-in-C Staff Conferences 4 October 1948, 11 October 1948, 18 October 1948, 25 October 1948.

²³⁰ TNA: AIR 24/2048, AOC-in-C Staff Conference 15 November 1948, 22 November 1948, 13 December 1948, 20 December 1948; AIR 24/2049, AOC-in-C Staff Conference 4 April 1949; AIR 38/309, 'Operation Plainfare Employment of Glider Pilots'.

²³¹ TNA, AIR 24/2048, SASO's Conference 4 October 1948.

²³² TNA, AIR 24/2048, AOC-in-C Staff Conference 6 December 1948, 13 December 1948, 20 December 1948.

²³³ TNA, AIR 24/2049, Minutes AOC-in-C Staff Conference 28 February 1948.

²³⁴ TNA, AIR 24/2048, AOC-in-C Staff Conferences, 25 October 1948, 1 November 1948 (reopening mid-November but no more officers were to be trained), 8 November 1948 (plans for officer training), 6 December 1948, AOC-in-C Staff Conference 10 January 1949.

movements specialist ones.²³⁵ AATO had a history that traced back to the Burma airlifts.²³⁶ AP3257 recorded that: 'The AATO organisation was instituted at the beginning of the Airlift and worked with outstanding success throughout. Co-operation with the RAF, USAF and CCG [Control Commission for Germany] was excellent.'²³⁷ AATO was crucial to the success of the Airlift. Pending Brigadier J. A. Dawson's arrival, it was commanded by Brigadier G. Lucas (Deputy Quartermaster-General British Army of the Rhine [BAOR]).²³⁸ Dawson had commanded the fledgling organization in Burma and had been Commandant Army Airborne Transport Development Centre between June 1946 and May 1948.²³⁹ AATO's Headquarters was located alongside HQ No 46 Group ('in effect we worked as one integrated formation to ensure the closest possible liaison'²⁴⁰) and it had Rear Airfield Supply Organization [RASO] units at Fuhlsbuttel, RAF Celle, RAF Fassberg, RAF Lubeck, RAF Schleswigland and RAF Wunstorf.²⁴¹ The Forward Airfield Supply Organization at RAF Gatow reported to it on technical matters. Figure 5.4 displays the organization in Germany.²⁴²

²³⁵ Sutton, pp. 102-3, identified one Army unit in Europe 'that had any experience in air supply', 749 Company RASC (Air Despatch). It was to become closely involved.

²³⁶ Sutton, p. 108, for example Lt Col R. C. Crowdy, air supply Burma and from July 1948 Operation PLAINFARE; R. C. Crowdy, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989, pp. 67-69.

²³⁷ AP3257, p. 68.

²³⁸ Sutton, p. 102.

²³⁹ Sir Oliver Leese, Lt Gen, 'Operations in Burma from 12th November 1944 to 15th August 1945', Second Supplement to *The London Gazette No. 39195 of 6th April 1951* (published 12 April 1951) pp. 1942-1944; William J. Slim, *Defeat into Victory* (London: Pan, 1999) p. 386; Airborne Assault, Plaque from Army Airborne Transport Development Centre <www.paradata.org.uk/media/43632?mediaSection=Photos&mediaItem=43741> [accessed 13 July 2013]; HMG, Supplement to *the London Gazette No. 41760 dated 7th July 1959* (printed 10 July 1959).

²⁴⁰ J. W. F. Merer, 'The Berlin Air Lift', *Proceedings of Lecture to Royal Aeronautical Society*, 13 April 1950, p. 9.

²⁴¹ AP3257, p. 68.

²⁴² AP3257, pp. 68, 557-558; T. H. Downes, 'The Berlin Airlift', *The Royal Army Service Corps Review*, Vol. 1, No. 1, 1948 (Aldershot: The RASC School, undated) p. 27.

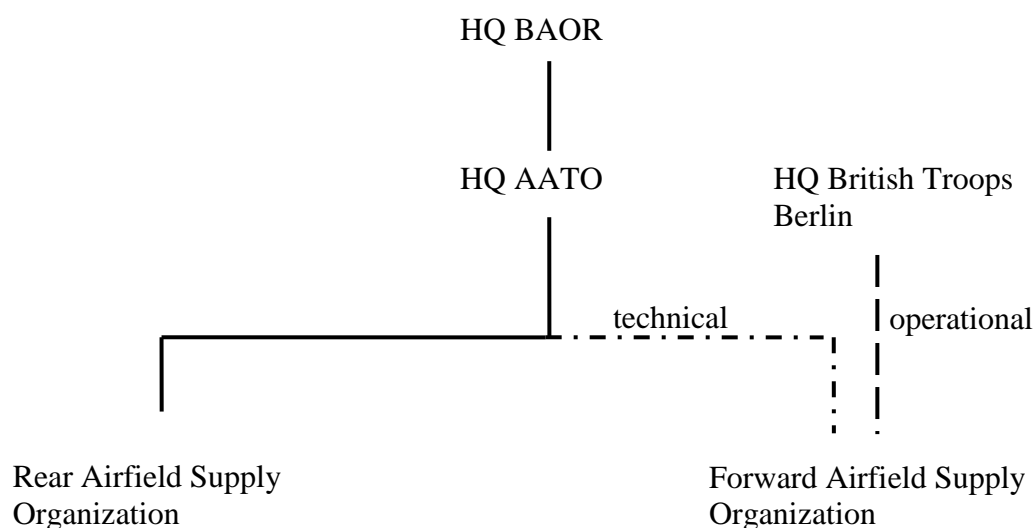


Figure 5.4: AATO Organization

The RASOs at the airfields in the Northern Zone received the supplies (including when necessary unloading them and transferring them from local railheads) and then stored, accounted and onwards shipped them via the Air Forces in the proportions and against the programmes issued by HQ AATO at the priorities stipulated by the Bipartite Control Organization. Stockholdings were reported to the CCG so that levels could be maintained and the bizonal authorities' delivery programmes maintained. Each RASO sorted the supplies into consignments appropriate to each type of aircraft using the airfield and loaded them into the aircraft under the supervision of the involved Air Force. It controlled and where relevant supervised all the locally engaged civilians, the motor transport, and the military drivers needed to deliver the RASO functions.²⁴³

The RAF Air Movement Section or the USAF traffic personnel were responsible for the documentation and overseeing the correct disposition and lashing of loads in the aircraft.²⁴⁴ At RAF Gatow the Forward Airfield Supply Organization offloaded the aircraft and handed the supplies on to Military Government Berlin or to the British

²⁴³ AP3257, pp. 557-587; Downes, pp. 30-32; Merer, pp. 9-11; Sutton, pp. 95-113; TNA, WO 291/1101, Department of the Scientific Adviser to the Army Council, Army Operational Research Group, Report No. 28/49, Observations on Army Aspects of Operation "Plainfare".

²⁴⁴ AP3257, pp. 173, 306; Downes, p. 30. Sutton pp. 103-104 and TNA, WO 291/1101, Report No. 28/49 recorded trained air despatch personnel undertaking the supervision role.

military authorities depending on where they were ultimately destined. It also backloaded empty sacks but not other consignments nor passengers which were handled by RAF air movements personnel.²⁴⁵ Similar functions in the Southern Zone and at Tempelhof were undertaken by the American forces whilst Tegel involved all three nations although the British were not normally involved in loading or unloading aircraft there.²⁴⁶

Where cargoes comprised a range of products, some heavy and dense others light and bulky, they needed to be blended carefully to ensure each load fully utilized both the aircraft's available payload and its cubic capacity. These 'marriages' of commodities resulted in a variety of package types, weights and sizes that could cause handling difficulties that adversely affected loading and offloading times.²⁴⁷ They complicated consignment planning and at the Berlin airfields, commodity redistribution.²⁴⁸ Palletization would have helped but was not viable generally as it would have added weight and required mechanical assistance. Instead small items were carried in sacks or boxes sized to permit easy man-handling and on-board stowage.²⁴⁹ Standard (uniform) loads were used when possible as this simplified loading, stowage and documentation. In some cases, such as coal, it was beneficial to carry single cargoes.²⁵⁰ Frequent checks on the actual weight of standard packages were necessary to ensure accurate filling and so avoid endangering aircraft by exceeding permitted payloads or affecting trim. This was especially true of enthusiastically over-filled coal sacks.²⁵¹ Ropes and chains were used to 'lash' cargo.

²⁴⁵ AP3257, pp. 173, 558; Merer, p. 9.

²⁴⁶ AFHRA, IRISNUM 1038217, 'Report of Department of the Army Observer Group Concerning Operation VITTLES' 16 February 1949, Annex 4, Appendix E, 'Operation Plainfare - Ground Organization'; AP3257, pp. 326, 558; *Berlin Airlift: A USAFE Summary*, pp. 5, 32-33, 35, 37-38; Lay, 'The Berlin Airlift: Part 2' in its entirety.

²⁴⁷ AP3257, pp. 68, 175, 305-306; *Berlin Airlift: A USAFE Summary*, p. 32; TNA, WO 291/1101, Report No. 28/49.

²⁴⁸ *Berlin Airlift: A USAFE Summary*, p. 32; TNA, WO 291/1101, Report No. 28/49.

²⁴⁹ AP3257, p. 174; *Berlin Airlift: A USAFE Summary*, p. 36; TNA, WO 291/1101, Report No. 28/49.

²⁵⁰ AP3257, 173-175.

²⁵¹ Harrington, *The Air Force can Delivery Anything*, pp. 28-29; Tunner, p. 204. See also Brookes, RAF flight safety specialist, *Disaster in the Air*, pp. 46-48 covering the ramifications of incorrect weight and trim calculation and MOD, AP101A-1101-1: *Air Transport Operations Manual Fixed Wing Aircraft*, 1st edn., Chap. 3.

Chains were cumbersome and heavy and reduced the beneficial payload. Nets saved considerable time but could not be used for all cargoes.²⁵²

Except for heavy loads (for example components for the West Berlin Power Station, construction equipment and rolls of newsprint), teams of displaced persons and German labourers, working under Army supervision, were found to be the fastest and most effective means of loading and unloading aircraft. The Army Report 'Observations on army aspects of Operation "Plainfare"' recorded off-loading times at RAF Gatow as 18 minutes for a C-54 carrying food and in 12 minutes for coal whilst a York loaded with food took eight minutes.²⁵³ The tasks were carried out as a fixed drill where every individual knew his task.²⁵⁴ The locally engaged civilian force of a typical RASO numbered 343 drivers, 2397 labourers, together with railway workers for the sidings, interpreters and clerks.²⁵⁵ Mechanical aids were used only for heavy items.²⁵⁶ Operating mechanical equipment including trucks and trailers near aircraft risked damage to intrinsically fragile aeroplanes.²⁵⁷ Carrying an entire aircraft load on one truck was found to reduce this risk and also to simplify loading.²⁵⁸

The task of loading and unloading was made harder by the design of almost all the aircraft types employed.²⁵⁹ British aircraft needed ballast to maintain their centre of gravity when empty. The Hastings and to a lesser extent the Dakota had a severe

²⁵² AP3257, pp. 69, 307; TNA, WO 291/1101, Report No. 28/49.

²⁵³ AP3257, pp. 60, 68, 175, 570; TNA, WO 291/1101, Report No. 28/49.

²⁵⁴ AP3257, p. 175.

²⁵⁵ Downes, p. 30.

²⁵⁶ TNA, WO 291/1101, Report No. 28/49 recorded that only the RASO at RAF Schleswigland had a forklift which was operated in the domestic area to load lorries; AP3257, p. 67 implied a wider use.

²⁵⁷ AP3257, p. 175.

²⁵⁸ AP3257, p. 68; TNA, WO 291/1101, Report No. 28/49.

²⁵⁹ Camille Allaz, John Skilbeck, ed., in English George Grant, *History of Air Cargo and Airmail from the 18th Century* (London: Christopher Foyle in assoc. with the International Air Cargo Association, 2004) pp. 190-191 (for background); TNA, AIR 24/2049, Minutes of AOC-in-C Staff Conferences 28 February 1949 - the GAL Freighter [GAL.60 Universal Freighter] was the precursor of the Blackburn Beverley. Photograph 18 in the Preliminary Section shows the capacious, level, rear-loading hold of the Beverley. Examples of Airlift aircraft being loaded and unloaded are at Photographs: 9, 12, 14-17.

slope that made handling cargo unnecessarily hard. The loading doors into the body of the Halifax and the passenger variant of the York were small and poorly positioned in the latter case. Hastings and Skymaster doors were high off the ground although they were conveniently low on the high-wing York. Floor strengths near the doors could be insufficient for the weight of items carried and where dedicated crew entrances were absent, a gangway was necessary in the cargo hold. These issues slowed loading and unloading and could affect what was carried.²⁶⁰ Door problems, moreover, introduced the risk of damage to the aircraft structure near the doors.²⁶¹ Time to re-role aircraft from cargo to passenger could be a consideration too. It was one of the reasons that the Dakotas were preferred over the Yorks or Hastings to carry evacuees as it could be done 'in a matter of minutes against the 40 minutes or more'.²⁶²

The standard Transport Command methods of documenting freight and passengers were too complicated and lengthy. A master weight-and-balance form was introduced for each type of aircraft. The cargo hold was divided up into compartments and the form recorded the weight that could be carried in each compartment. The freight manifest was simplified too. It recorded just the weight and a brief description of what was stowed in each compartment which speeded up loading and unloading. The revised forms were sufficient to track consignments and to provide aircraft captains with what they needed pre-flight. Passenger documentation was also reduced. As far as was safely possible documentation was completed beforehand.²⁶³ Not only did documentation revision speed up turn round, it simplified the tasks of the air movements staff, 'many of whom had received no instruction in air movements duties prior to their employment in the operation'.²⁶⁴

Integrated air movements/RASO load controls evolved as experience was gained.²⁶⁵ They made up each aircraft's cargo and called it forward in a timely fashion. Close

²⁶⁰ *AP3257*, pp. 69-70, 158, 174-175.

²⁶¹ *AP3257*, p. 174.

²⁶² *AP3257*, pp. 70, 174 (for quotation).

²⁶³ *AP3257*, pp. 69, 173.

²⁶⁴ *AP3257*, pp. 173-174.

²⁶⁵ *AP3257*, p. 68.

co-operation between the load control, servicing control, aircrew control, and airfield approach control allowed the matching of loads to aircraft availability. This permitted awkward consignments to be assigned to aircraft which were undergoing minor rectification whilst that which was quick to load was allocated to serviceable aircraft with available aircrews.²⁶⁶ Efficiency developed with experience.

HARASSMENT

The Hump, Imphal and Leningrad airbridges were liable to enemy attack. Any residual chance that the garrison at Stalingrad might have had disappeared when the Soviets captured the Luftwaffe's consignor and consignee airfields. A similar situation would have arisen in Berlin if the Soviet army had rolled forward a couple of miles and blocked RAF Gatow's runways. The orderly and efficient ground-handling of aircraft, so essential to the Airlift, would have been unachievable if the airfields in Berlin had been subject to air attack or spasmodic shelling.

The Soviet sector supplied electricity to RAF Gatow.²⁶⁷ Electricity to RAF Gatow was cut-off on 15/16 September 1948.²⁶⁸ The Tusas cited an occurrence on 2 October 1948 and that the power returned permanently once the British authorities reminded their Soviet counterparts that they supplied the Soviet airfield at Staaken (Dalgow/Dallgow) and the [Soviet-controlled] Radio Berlin building.²⁶⁹ Noteworthy to this incident is that Staaken was rarely used at night and so it may have been Radio Berlin that triggered their cooperation.²⁷⁰

MATS recorded 733 harassment incidents by the Soviets during the Airlift.²⁷¹ Exploration of the incident summaries does not point to these being orchestrated by

²⁶⁶ AP3257, pp. 155, 174-75.

²⁶⁷ Barker, p. 55.

²⁶⁸ TNA: AIR 20/6891, DDTC 20 September 1948; AIR 24/1807, Part I Air Staff March 1949 records one undated occurrence.

²⁶⁹ Ann and John Tusa, *The Berlin Airlift* (Staplehurst: Spellmount, 1998) pp. 26, 256.

²⁷⁰ TNA, CAB 21/1892, E.84 Berlin Military Governor No. 337 10 March 1949.

²⁷¹ AFHRA: IRISNUM 1093673, Roger D. Launius and Coy F. Cross II, *MAC and The Legacy of the Berlin Airlift* (Scott AFB IL: Military Airlift Command Office of History Monograph, 1989) p. 52.

a central authority and it is questionable whether many were harassment.²⁷² None of the Airlift crashes were attributed to Soviet action.²⁷³ If neither side sought open warfare, it would have been foolish to have taken action that caused an unarmed transport aircraft legitimately flying along a corridor to have come down with probable loss of life. The Airlift made extensive use of radio and radar to achieve its high performance, 24 hours per day and in most weathers.²⁷⁴ Eighty two incidences were ascribed to radio interference.²⁷⁵ The RAF had counter measures ready. They recognized that Soviet electronic 'jamming' would have a serious impact on the Airlift but believed that it was unlikely to be used.²⁷⁶

Reports were produced in 1950²⁷⁷ and 1952²⁷⁸ addressing the options available to the Soviets to interfere with any future airlift. The possibilities varied from being able to stop the traffic flow by jamming to more reassuring conclusions that the tonnage hauled would be 25% less than planned but an airlift was still practical. To avoid being 'so blatant' as to become a 'casus belli'²⁷⁹, Soviet or East German measures such as burning bush fires, raising balloons and jamming might have been used intermittently for their nuisance effect. As the Berlin Air Safety Zone was shared and the airfields close together, a parallel Soviet Airlift would have been detrimental as would have been building tall buildings and radio masts in the Soviet Sector along the approaches to RAF Gatow.²⁸⁰ There was nothing new generically

²⁷² AFHRA: IRISNUM 240605, USAFE and the Berlin Airlift: Supply and Operational Aspects 1949, HQ USAFE, 1 February 1950; IRISNUM 241498, 'Berlin Airlift Corridor Incidents 10 August 1948 to 5 August 1949'. See also Victor Gobarev, 'Cold War Crises: Soviet Military Plans and Actions during the First Berlin Crisis, 1948-49', paper edited by David M. Glantz, *The Journal of Slavic Military Studies*, Vol. 10, No. 3, September 1997 p. 20 for a Russian assessment.

²⁷³ AP3257, pp. 239, 407-413; Miller, *To Save a City* (Texas A&M) App. 2.

²⁷⁴ Launius and Cross, p. 53.

²⁷⁵ Launius and Cross, p. 52.

²⁷⁶ AP3257, pp. 39, 173; Kenneth Cross, *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989) p. 87; TNA, AIR 38/319, 'Signals Communications - Interference and Jamming'.

²⁷⁷ TNA, AIR 20/8014, COS(50)169 25 May 1950 and its Appendix: 'HQ BAFO and HQ USAFE Staff Study'.

²⁷⁸ TNA, AIR 20/11405, COS(52)422 11 August 1952.

²⁷⁹ Quotations extracted from TNA, AIR 20/11405, Sanders (DCAS) 29 August 1951.

²⁸⁰ TNA, AIR 20/11405, folder 'Germany - Ability to Resume Airlift' in its entirety.

in 1950 or 1952 that the Soviets could not have done in 1948-1949 and as discussed in Chapter 6, the Berlin Airlift margins were at times very fine. The absence of orchestrated interference reinforces the views that the Soviet hierarchy was not seeking an armed conflict and that they probably expected the Airlift to fail without their overt interference.²⁸¹

CONCLUSION

Chapter 5's examination of the success factors found in the earlier airbridges at Chapter 3 identified a mixture of lessons learnt, not learnt and examples where the advantages may have been appreciated but implementation was not possible. Theoretically RAF No. 46 Group and the US 1st ALTF were part of CALTF under Tunner with Merer as his deputy. In reality the British and American air transport fleets were commanded on a day to day basis by a national specialist unit detached from Transport Command and MATS respectively. Each one reported to a local higher formation which was not experienced in air supply and the arrangement was far from perfect. However, this was a large complex operation which needed the infrastructure controlled by these higher authorities and the extant liaison between them and with the local army Commands and the civilian occupation organizations. Thus from this wider viewpoint the involvement of HQ BAFO and HQ USAFE made sense.

Both Americans and British flew 24 hours per day in most weathers although initially the contractors tended to be "fair weather flyers". Air traffic procedures were developed to make best use of the corridors, the airfields, and the more effective aircraft in the larger American fleet. The airfields nearest to Berlin were in the British Zone and as time passed the USAF operated from two RAF bases, with a third one under development. Civil engineering was undertaken to improve all Airlift airfields and Tegel was built from scratch.

The American fleet concentrated on one aircraft type. Its USAF element was short

²⁸¹ Michail M. Narinskii, 'The Soviet Union and the Berlin Crisis', in *The Soviet Union and Europe in the Cold War, 1943-53*, ed. by Francesca Gori and Silvio Pons (Basingstoke: Palgrave, 1996) pp. 67, 71-72, 74; Narinskii was emphatic that neither the Soviets nor the Western Powers wished to escalate the Blockade into a hot war - pp. 67, 74.

of mechanics on the squadrons but 1st ALTF was adaptable enough to employ ex-Luftwaffe personnel to increase the numbers. By sound but flexible thinking and the allocation of large numbers of aircraft to the front line with growing support, the Americans were able to generate sufficient deliveries to meet their targets. The British had to employ a range of different aircraft including aircraft and personnel contracted from civilian companies. The larger RAF aircraft were unreliable and all three types had design deficiencies.²⁸² The RAF was short of aircrew and maintenance staff. Unlike the Americans, it did not use ex-Luftwaffe personnel for other than 'non-skilled' tasks and the Government was unwilling to recall reservists en masse. RAF maintenance policies were unsuitable for this type of operation.

Some of the British aircraft types were difficult to load owing to having tail wheel configurations which caused steep slopes inside the fuselages whilst others had small access doors. Cargo handling on the ground was efficient being undertaken almost entirely by the British and American armies augmented by large numbers of locally engaged civilians. Most of the loading and unloading of aircraft was done by hand using trained teams adhering to standard procedures.

The Soviets had the capability to interfere with the Airlift. They opted not to do so probably to avoid the risk of the Cold War becoming hot and because they expected the Airlift would fail during the winter of 1948-1949. That would have been a not unreasonable expectation if their reference experience was Leningrad and Stalingrad. Whilst these are plausible arguments, they do not explain why capabilities were not deployed after it was apparent that the Airlift was not failing, especially as the Soviets had options that did not directly risk CALTF aircrews or their aircraft.

As *AP3257* acknowledged, RAF performance was not as good as the Americans.²⁸³ Furthermore, the differences between the American and British performances arose from reasons in addition to Barker's aircraft sizes and numbers. Chapter 5 revealed that the causes for Britain's performance were due partly to the Nation's financial state and the priorities that her Government had set post-war. The reduced state of

²⁸² The Short Sunderlands and civilian Hythes were only used in 1948.

²⁸³ *AP3257*, pp. 24, 85.

the RAF meant that Dakotas had to be deployed to increase her share of the tonnage delivered and even then there was a shortfall which necessitated contractors having to be engaged. The ratio of aircrews to RAF aircraft was insufficient as were the number of maintenance personnel both in Britain and in Germany. Poor pay and conditions reduced the possibility of retaining those with a discharge option and persuading suitable ex-servicemen to rejoin. The size of the Air Force, and its transport arm especially, led to shortages generally and deploying Dakotas necessitated spending dollars on additional spares that could not be purchased in sterling. Examination of performance differences continues in Chapter 6.

CHAPTER 6:

BERLIN AIRLIFT - ANALYSIS OF THE LOGISTICAL RESEARCH QUESTIONS

Chapter 6 explores whether participation by British aircraft was necessary logistically and could the more efficient Americans, with greater aerial resources, have undertaken the airborne operation on their own. It answers three specific questions: were British aircraft needed logistically; could the Americans have replaced them by deploying more resources or by locating all of 1st ALTF in the Northern Zone which was nearer to Berlin than the American Southern Zone. In evaluating these questions, Chapter 6 also continues to identify the reasons that the British hauled less tonnage than the Americans.

From June until September 1948, the Airlift was intended to tide over western Berlin until normal surface communication was resumed. From October 1948 to the start of March 1949, it allowed western Berlin to survive the winter. The next phase was intended to supply western Berlin and to build up stocks for the next winter. Instead with the lifting of the blockade in May 1949 it became a period when stockpiles were built by air and surface transport in case the Soviets reinstated the Blockade.

Towards the end of that phase the Airlift was gradually rundown with the last RAF aircraft (Hastings at RAF Schleswigland) stopping operations on 6 October 1949.¹ This research focussed on the Airlift during the Blockade, from the first sorties by RAF Waterbeach aircraft from RAF Wunstorf on 25 June 1948 until it was lifted at 0001 hours on 12 May 1949.²

Resolution of the question about the necessity for British aircraft involved comparison of the targets set and the tonnages carried. The one about deploying more American resources entailed determining whether enough additional resources existed to replace the British aircraft. Relocating 1st ALTF explored how much additional tonnage would have been carried by Wiesbaden or Rhein-Main aircraft if

¹ HQ BAFO, *AP3257 A Report on Operation PLAINFARE (The Berlin Airlift) 25th June 1948 - 6th October 1949* (Bielefeld: Control Commission, 1950) p. 149; TNA: AIR 55/98, E.3 Charlesby September 1949; AIR 55/110, Form STATS 120 1 to 7 October 1949.

² *AP3257*, pp. 117, 129, 551-552.

based at an airfield on the eastern side of the British Zone.³ The targets set were compared with the tonnages achieved or potentially achievable. Additional issues had to be considered which drew on material contained in Chapters 4 and 5 such as airfield availability; impact on traffic flow in the three corridors and within the Berlin Air Safety Zone, and British specialities such as the Wet Lift.⁴ It provided the opportunity to examine further the efficiency of the British fleets; the cost to and cost-sensitivities of the Treasury about the Civil Lift⁵, and Transport Command's other commitments⁶.

TERMINOLOGY AND STATISTICS

Tonnage statistics form the kernel of Chapter 6. These are taken from those compiled at the time and in the main originated from the cargo manifests which were not always accurate. With so many different nationalities and organizations collecting data at different points in the system for a variety of purposes, there were disparities as the examples at Appendix 6 show. Normally the Americans and the British captured their statistics independently and then shared the information.

As Barker wrote, 'A good deal of statistical confusion has arisen about the airlift

³ Liddell Hart Centre for Military Archives, King's College London, Waite, RNW/DO 31 August 1948 to SASO BAFO, stated that a Fassberg C-54 was making 3.1 deliveries per day, a Rhein-Main one 1.9 and a Wunstorf York 2.3. By shifting the 79 C-54s at Rhein-Main to the Northern Zone Waite calculated an increase of 953 metric tons per day. Basing the whole Skymaster fleet in the Northern Zone was rejected because of the danger of it being grounded in adverse weather. Charlesby agreed with Waite's 50% improvement but disagreed with the rationale for not implementing relocation totally. He argued that the metrological evidence did not substantiate the decision, although his report showed sortie losses fluctuated between the zones - TNA: AIR 55/98, Es:38-46 Science 2 Report No. 143 15 October 1948; AIR 55/102, Research Branch BAFO Report 43 July 1949. 145 trips were flown from RAF Fassberg and RAF Celle by Rhein-Main and Wiesbaden C-54s during bad weather in January 1949 - HQ USAFE, *Berlin Airlift: A USAFE Summary*, 26 June 1948-30 September 1949 (HQ Ramstein AFB: USAFE reproduction Centre, undated, circa 1950) p. 34.

⁴ TNA, Air 55/98, E.68 part of undated report sent by Charlesby to Aston.

⁵ 'Freddie' Rainsford, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989); TNA, AIR 20/6892, Kirkpatrick to Tedder probably 16 February 1949 [deduced from probable Tedder reply 18 February 1949] under cover of PS to CAS minute 18 February 1949.

⁶ TNA, AIR 20/6892, Paper DDTO and DDASTO 17 January 1949.

because the nations concerned use the word "ton" to describe different weights'.⁷ The Americans and the British measured aircraft weights and cargo manifests in 'Anglo-American' pounds.⁸ The loads were then totalled in tons, with the Americans using short tons (2,000lbs) and the British employing long tons (2,240lbs) initially before moving to short ones. The Germans and western Berlin occupation authorities utilized metric tons/tonnes (2,204.6lbs).⁹

The various "tons" led to misleading information being published and to friction between organizations. Communication in this area also displayed the growing embarrassment of the British about size of the tonnage carried by the RAF in comparison with the Americans. Complaints were made by HQ BAFO that the daily Airlift situation reports [ALREPs] distributed by the British in Berlin showed the RAF's performance in a bad light. The AOC-in-C BAFO communicated tersely directly to the RAF senior officer Airlift Headquarters (a British unit under the command of the GOC British Troops Berlin). The GOC British Troops Berlin responded by agreeing to circulate some of the 'sensitive' (about RAF performance) statistics on a limited distribution.¹⁰ As late as April 1949 disputes were still taking place about the use of gross or net weight and metric or short tons, and how information should be released to the media.¹¹

⁷ Dudley Barker, *Berlin Airlift: An Account of the British Contribution* (London: HMSO, 1949) p. 6.

⁸ TNA, AIR 20/7816, Extract from Waite to GOC 18 December 1948.

⁹ AP3257, pp. 515, 519; TNA: AIR 20/7284, Berlin Daily ALREPS Nos 185-270 used metric tons; AIR 20/7816, ALREP Correspondence generally and as examples: Waite, 21 September 1948, BAFO KAO150 24 December 1948, HQ Airlift ALX463 6 January 1949; AIR 20/7829, Jones 11 July 1949; AIR 24/1806, BAFO, 'Brief Resumé of Command 1948' used long tons; AIR 25/1252, HQ No. 46 Gp. Fs540, Air Staff November 1948 used metric tons in giving the requirements for Berlin for December 1948 yet on 17 December 1948 stated '100,000 long ton' delivered.

¹⁰ Daniel F. Harrington, *The Air Force Can Deliver Anything: A History of the Berlin Airlift* (Ramstein AFB: USAFE History Office, 1998) p. 67; TNA: AIR 20/7282-7285, AHB Daily Airlift Reports; AIR 20/7816, Waite 27 October 1948, HQ Airlift British Troops Berlin ALX383 11 November 1948, AVM C. B. S. Spackman (SASO BAFO) 18 November 1949 with attachments, Waite 30 November 1949, Spackman 3 December 1948, BAFO AX509 6 December 1948 (AOC-in-C to Waite), Waite 11 December 1948, HQ British Troops Berlin COMD1435 14 December 1949 (GOC to AOC-in-C), HQ Airlift ALX463 6 January 1949, HQ Airlift AL527 24 February 1949, BAFO A593 26 February 1949, Bourne 5 March 1949.

¹¹ TNA, FO 943/775, FO (German Section) No. 195 Basic 8 April 1949, Berlin No. 21 Basic 25 April 1949.

Although terms such as 'sortie' were defined, they were sometimes used colloquially. Care needs to be taken to determine whether USAF and USAFE data included the two high performing USN squadrons that were part of 1st ALTF.¹² Sources expressed doubts about the accuracy of the recorded data¹³, including whether the notional weight of passengers was included in reported tonnages¹⁴.

The ALREP recording cycle in Berlin covered from midday to midday whilst, for example, the Wunstorf RASO cycle initially centred on 0600 but subsequently also synchronized on 1200 hours.¹⁵ Even when daily statistics were aligned the question remained whether a total represented the receipts in Berlin or tons despatched from western Germany.¹⁶

Gross weight was significant to the US and British Air Forces and the Armies in the western zones as it was what they handled. Net weights were important in Berlin as it was the contents that were crucial to them.¹⁷ AP3257 cited a 7% difference overall.¹⁸ The civilian tanker fleet ('tank machines'¹⁹) carried its bulk fuel cargo in tanks that were an intrinsic part of the aircraft, albeit often specially added to the airframe, or in a pannier slung below it. In the case of the Wet Lift net weight was

¹² AFHRA: IRISNUM 240605, 'USAFE and the Berlin Airlift 1949: Supply and Operational Aspects' HQ USAFE 1 February 1950, p. 224; *Berlin Airlift: A USAFE Summary*, p. 5; Department of the [US] Air Force, Operations Statistics Division, *United States Air Force Statistical Digest Jan 1949 - Jun 1950 Fifth Edition* (Washington DC: US Government, 1951) USAF Airlift data Table 207 which stated at p. 397: 'This presentation covers USAF operations only'.

¹³ TNA, FO 1077/4, CAATO Notes on Conference 27 April 1949; William H. Tunner, *Over the Hump* (Washington DC, US Government, 1985) p. 204 about the accuracy of manifests; *USAF Statistical Digest Jan 1949- Jun 1950*, Table 207 recorded for example that between March through May 2% of the sorties flown to Berlin by USAF C-54s at Rhein-Main were aborted, a total of about 3,410 short tons.

¹⁴ TNA, AIR 20/7816, Waite 6 January 1949.

¹⁵ AP3257, p. 564; TNA: AIR 20/7285, for example; WO 267/497; WO 267/498.

¹⁶ TNA, AIR 20/7816, Herbert 11 November 1948.

¹⁷ TNA, AIR 20/7816 Waite 21 September and 10 November 1949, Herbert 11 November 1949.

¹⁸ AP3257, p. 5; TNA, AIR 20/7816, Herbert 19 October 1948 cites 4% tare for coal.

¹⁹ TNA, AIR 20/6891, FO (German Section) 3213 Basic, 3 Nov 48.

recorded.²⁰

Passengers were carried in Operation PLAINFARE and Operations VITTLES aircraft.²¹ Before the Blockade the RAF ran scheduled 'P.19' flights between RAF Buckeburg and RAF Gatow carrying mail, official passengers and freight. These flights continued during the Blockade using Dakotas provided from the Operation PLAINFARE fleet.²² P.19 data was sometimes included in PLAINFARE statistics but at other times it was not.²³ Passengers were recorded in the American tonnage as a notional gross weight. AP3257 cited P.19 statistics including weights of passengers.²⁴ Passengers and freight were also carried into Berlin by the civilian scheduled airlines which were not included in Airlift statistics.²⁵

Tonnages despatched differed from those received by Berlin which made routine comparison with the Airlift targets an imprecise activity.²⁶ Charlesby, for example, found a 10% disparity between CALTF figures and those compiled at Berlin during the period December 1948 through February 1949 period.²⁷ This was due to the inaccurate manifests and aborted delivery sorties identified above and also to theft, spillage and "natural wastage".²⁸ Food gives an example of the impact of such

²⁰ AP3257, Apps. C pt. VI, and T.

²¹ AP3257, pp. 65-66.

²² AP3257, pp. 100, 119; TNA, AIR 28/997, RAF Buckeburg ORB; examples of squadron detachments to P.19 duties: TNA: AIR 27/2395, 10 Sqn December 1948 - January 1949; AIR 27/2405, 27 Sqn July 1948; AIR 27/2406, 30 Sqn February 1949 Appendix 1; AIR 27/2417, 46 Sqn December 1948.

²³ AP3257, App. R; TNA, AIR 24/2046-2052, TC ORBs, monthly statistics summaries.

²⁴ AP3257, pp. 301 (three C-54 passenger flights were included in the daily requirements as 30 tons), 526-527; TNA, AIR 20/7816, Waite 6 January 1949.

²⁵ AP3257, p. 341, for example BEA; Theodore Joseph Crackel, *A History of the Civil Reserve Air Fleet*, Air Force History & Museums Program (Washington DC: US Government, 1998) pp. 60-61 for US airlines, citing American Overseas Airlines, the scheduled operator making 2,186 trips to Berlin between June 1948 and the end of May 1949 lifting 'over 7,250 tons of cargo and more than 29,000 passengers'. In all Crackel writes that about 2,500 trips to Berlin were made by US airlines.

²⁶ TNA, AIR 55/100, Es:24-26 Charlesby undated but post 1948/49 winter.

²⁷ AP3257, p. 365.

²⁸ *Berlin Airlift: A USAFE Summary*, pp. 30, 165; Sebastian Cox, 'Britain and the Berlin Airlift' *Royal Air Force Air Power Review*, Vol. 7, No. 1, Spring 2004, p. 39; Elizabeth S. Lay, Historical Division, Headquarters European Command, 'The Berlin Airlift: Part 2: 1 January-30 September 1949', *Occupation Forces in Europe Series 1948 -1949*, (Karlsruhe: Footnote continues on next page.

disparities. Between the Airlift starting and its end the combined force hauled nearly 540,000 short tons of food.²⁹ If this figure was too high by 5%, the shortfall would have been 27,000 tons or in excess of 25lbs per western Berliner which equated to nearly 19 days rations at the 20 October 1948 level.³⁰

Although Chapter 6 concentrates on targets, requirements and achievements, it would be wrong to suppose that when there were shortfalls the western Berliners had to rely on any personal reserves, shopkeepers' stocks or the porous blockade (Chapter 2 above). Stockpiles had been built up prior to the Blockade (Chapter 2).

Charlesby's study into 'The Supply of Berlin during the Winter of 1948/1949' (actually 1 December 1948 to 28 February 1949) revealed that planners had stockpiles and minimum levels which they strove to maintain.³¹ At the end of February coal stocks totalled 28 days consumption³² including 4 days arising from the 'discovery of further coal stocks' as opposed to the minimum reserve level of 21 days. Charlesby described 'the margin of safety' as 'quite small' but with summer two months away and assuming the Airlift continued, Berlin's quartermasters should have been comfortable with those stock levels.³³ What should have been of greater concern were the food levels which a study graph showed had risen then fallen and by the end of February were at about 27 days against a planned level of 34.³⁴

WERE BRITISH AIRCRAFT NEEDED LOGISTICALLY?

Table 6.1 summarizes the division of the Airlift in terms of tonnage between the Americans and the British. In July 1948 the British hauled 42% of the cargo, in August 38%, but in September, which marked the start of their decline in percentage terms, only 27%. Over the whole Airlift period the British transported 23% of the

1952) pp. 5, 21, 27-28, 50-51, 127, 129; J. W. F. Merer, 'The Berlin Air Lift', *Proceedings of Lecture to Royal Aeronautical Society*, 13 April 1950, p. 10; TNA, FO 1077/4 CAATO Conference 16 May 1949; Tunner, p. 204.

²⁹ AP3257, p. 521.

³⁰ AP3257, p. 301.

³¹ AP3257, pp. 365-370; TNA, AIR 55/100, Es:24-29 Charlesby undated.

³² Whether this was at winter, summer or average rates was not stated.

³³ AP3257, p. 367.

³⁴ AP3257, p. 370.

total. Was this effort necessary logistically?³⁵

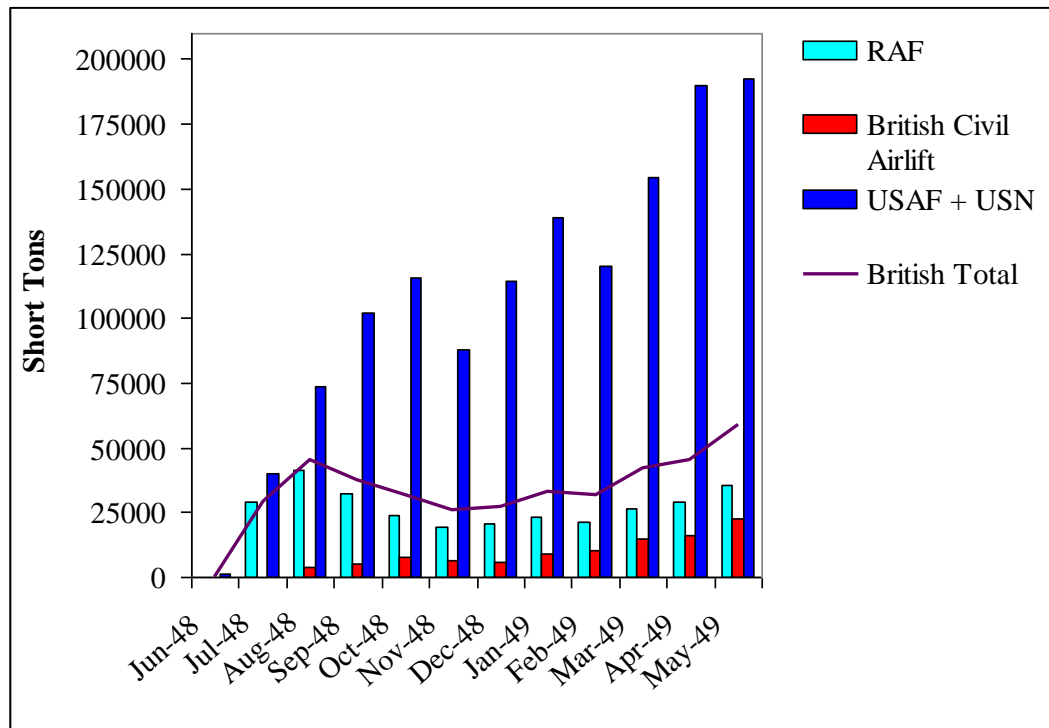


Table 6.1: Division of the Airlift between the Americans and the British

During the Blockade the military governors set several targets³⁶ for the Airlift with the actual monthly requirements being circulated by the Occupation Authorities³⁷.

The targets, however, must be viewed against the CALTF 'constitution' which directed that:

2. The purpose of this organization is to merge the heretofore but independent, USAF-RAF airlift efforts in order that the resources of each participating service may be utilized in the most advantageous manner. Its primary mission is to deliver to Berlin, in a safe and efficient manner, the maximum tonnage possible consistent with combined resources of equipment

³⁵ AP3257, p. 519.

³⁶ AP3257, pp. 5-6, 301; TNA, AIR 2/10064, Es:275-280 Robertson 18 March 1949 and 14 March 1949 Appreciation.

TNA, AIR 55/100, Es:8-9 Charlesby 30 November 1948, 14-16 Charlesby 11 January 1949, 24-26 Charlesby undated but post 1948/49 winter - reports on target planning.

³⁷ AP3257, pp. 65-67, 300-301, 563-564; examples in TNA: AIR 20/7803; AIR 20/7807; AIR 20/7828; AIR 20/7829.

and personnel available.³⁸

Table 6.2 shows in two parts what the Airlift achieved between its start in June 1948 and the end of the Blockade in May 1949 against the "mandatory" targets recorded in *AP3257* and the higher "desirable" requirements for July and August 1948 (4,374 tons per day) and April 1949 onwards (8,944 tons per day).³⁹ Whilst in each period the tonnage hauled exceeded the mandatory target, the winter figures show how close the margins were, just half of one winter's day's target (and, as discussed above in the 'Terminology and Statistics' Section, that assumes that the overall tonnages recorded were correct). Between 1 July 1948 and 30 April 1949 the mandatory targets were met but the desirable ones were not with the Airlift falling short by a total of 93,000 tons. The 1 to 12 May 1949 inclusive figure gave a daily average of 8,799 short tons hauled which was well above the daily mandatory target of 5,620 but still below the desirable one of 8,944.⁴⁰

³⁸ TNA, AIR 25/1266, No. 46 Gp. ORB, Appendices September-October 1948, Appendix 20 to Form 540 dated 15 October 1948.

³⁹ *AP3257*, pp. 5-6, 301, 519. *AP3257*, p. 301 gave the date for the winter 1948-1949 revision to 5,620 short tons as 20 October 1948 but did not identify when it became the Airlift target. Roger G. Miller, *To Save a City: The Berlin Airlift, 1948-1949* (College Station, TX: Texas A&M University Press, 2000) p. 169 stated that the "Clay" 5,620 short ton requirement was set on 22 November 1948 with it becoming an Airlift target at the start of the New Year 1949.

⁴⁰ *AP3257*, pp. 65, 301, 519; TNA: AIR 19/621; AIR 20/7816; AIR 20/7285; AIR 20/7286; AIR 55/110.

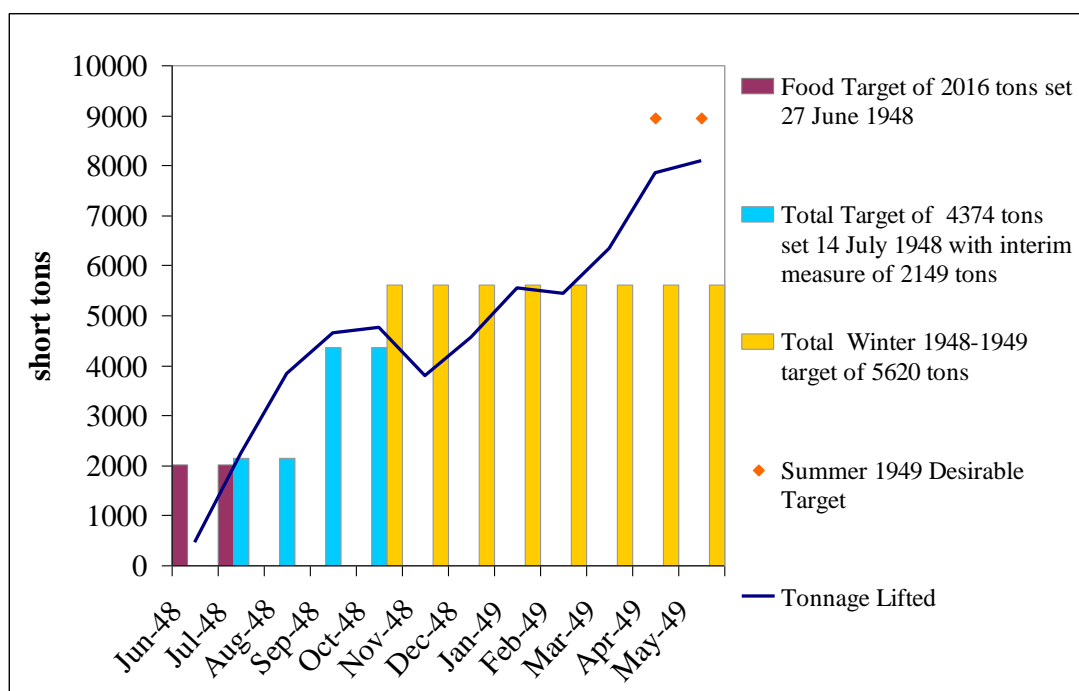


Table 6.2.1: Comparison of Targets and Deliveries - Graphical Summary

	<u>Carried</u> (a)	<u>Mandatory</u> <u>Target</u> (b)	<u>Desirable</u> <u>Requirement</u> (c)	<u>a-b</u>	<u>a-c</u>
June 1948	1,404				
July - October 1948	475,212	400,052	538,002	75,160.	-62,790.
November 48 - March 1949	775,371	772,614	772,614	2,757	2,757
April 1949	235,364	168,600	268,320	66,764	-32,956
1 to 12 May 1949 ⁴¹	105,589				
July 1948 - April 1949	1,485,946	1,341,266	1,578,936	144,680	-92,990

Table 6.2.2: Comparison of Targets and Deliveries - Detail (rounded short tons)

1948-1949 was an exceptionally mild winter (average temperatures for December

⁴¹ Because of the way data was concatenated in the daily reports, the figures include 12 hours after the blockade ceased.

1948 through February 1949 matched those normally experienced in November).⁴² The domestic heating coal ration was only 50lbs per family rather than the intended four cwt thereby saving nearly 1500 metric tons per day.⁴³ The good weather improved aircraft maintenance and permitted more trips per day than had been expected.⁴⁴ An additional four days' coal stocks were discovered in western Berlin⁴⁵ and more Skymasters were provided than had been planned.⁴⁶ Nevertheless, for a time the Airlift had to haul coal instead of food so that the city did not fall below its 21 day minimum reserve level.⁴⁷

However, it is not the interim Airlift targets that should be considered when deciding if British participation was necessary but the long term one of 8,944 short tons per day.⁴⁸ This was a daily average across the year and because of the adverse weather in winter, the figures hauled in summer had to be greater to compensate. DDASTO, for example, wrote that adverse weather meant that a force with a potential to deliver 851 short tons per day could be expected to deliver 680 on average in summer and 510 in winter.⁴⁹ Not only did the daily sorties fall in winter but consumption grew as the example at Table 6.3 shows.

⁴² AM, *RAF Air Clues*, Vol. 3, No. 12, August 1949, pp. 16-17.

⁴³ *Air Clues*, August 1949, p. 17.

⁴⁴ *Air Clues*, August 1949, p. 17.

⁴⁵ *Air Clues*, August 1949, p. 22; TNA, AIR 55/98, E.66 part of draft for *Air Clues*.

⁴⁶ *Air Clues*, August 1949, p. 17.

⁴⁷ *Air Clues*, August 1949, p. 22; TNA, AIR 55/98, E.66. TNA: FO 1012/567, Es:4-7 Command Section (Plans) CS(P)7 Prince 15 December 1948 provided the estimate sought by GOC British Troops Berlin of shortfalls to be expected during January and February 1949 assuming 14 days' coal stocks remained on 28 February 1949 at February's consumption rates and CALTF met its error-corrected targets; FO 1012/568, Command Section (Plans) CS(P)8 Prince 23 December 1948 revised the estimated shortfall to reflect the lower than expected deliveries in December and a reduced expectation for January and February 1949. Whilst nowhere near as dire as conditions during the Siege of Leningrad these estimates pointed to an unpleasant winter.

⁴⁸ AP3257, p. 6; TNA, Air 2/10064, Es:318-319 James 10 March 1949.

⁴⁹ TNA, AIR 2/10064, Es:54-58 DDASTO August 1949. In the December 1948 Appraisal - TNA, AIR 2/10063, Es:45-52 Cannon/Williams 22 December 1948 - the forward estimate of losses for January 1949 was 48% for the British overall and 36% for C-54s owing to weather and other factors. The BAFO Chief Research Officer - AIR 55/98, Es:19-20 part of draft undated BAFO report - used slightly different criteria and reached slightly different figures for the impact of adverse weather, a loss of 50% in the worse month and 6% in the best.

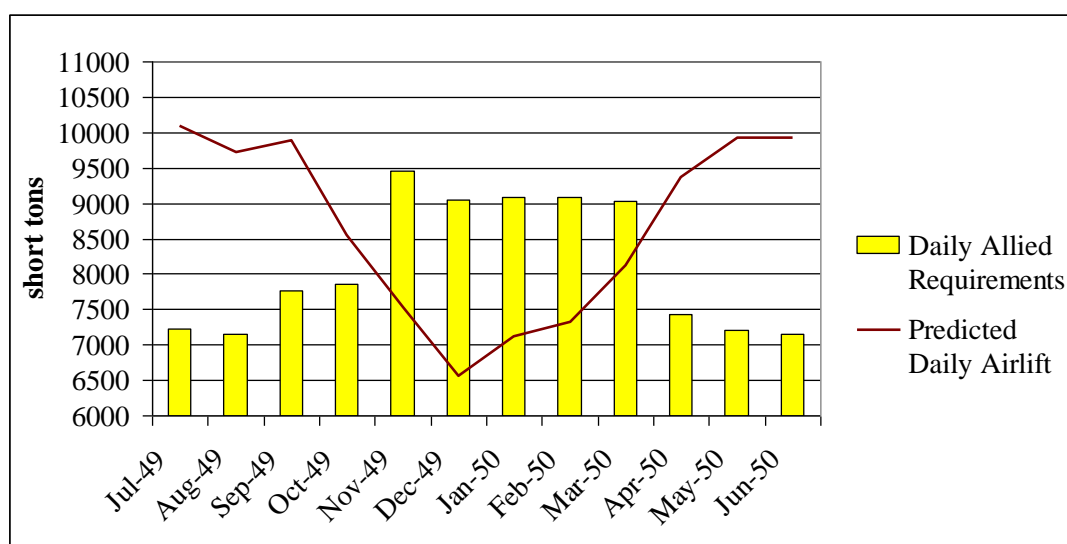


Table 6.3: Comparison of Predicted Daily Requirements against Predicted Daily Airlift July 1949-June 1950⁵⁰

Robertson's 18 March letter to Bevin⁵¹ (albeit considering a slightly smaller long term figure of 8,685 short tons) used descriptions such as 'minimum'. This was in spite of the intended one third of the potato ration being fresh, a growth in the 'average' ration to 2,100 calories, and an increase in domestic electricity to four to five hours per day and possibly six. Particularly he stated a domestic coal quota for heating of four cwt per household was inadequate and pointed to 18 cwt having been issued in the Northern Zone during the previous winter. Robertson proposed a target of 9,000 short tons but recognized even that would only provide five cwt per household. Williams indicated 10,000 tons would be the target sometime in 1950⁵² and Clay advocated the same figure for the next target upgrade⁵³. Thus the figures for early May 1949 whilst seemingly good were not approaching the tonnage needed to be delivered that summer.

May 1949 was the peak month when the average number of landings per day at all

⁵⁰ TNA, AIR 19/766, App. A to ALC/R(49)1.

⁵¹ TNA: AIR 19/766, Robertson 18 March 1949 and attached AK/Memo(49)6 dated 14 March 1949; AIR 20/6892, Bourne 3 March 1949 cited a 'narrow margin of safety'; FO 1012/571, Es:2-6 C.S.(P)14Command Section Ferguson 17 February 1949.

⁵² TNA, AIR 2/10063, Es:21-26 Meeting 18 January 1949.

⁵³ TNA, AIR 2/10064, Es:318-319 James 10 March 1949.

three Berlin airfields, including the daily handful of P.19 trips, totalled 894.⁵⁴ The Americans calculated the theoretical saturation point, would be a force of 475 aircraft and making 1,440 landings per day in Berlin in good weather.⁵⁵ This was based on the three airfields in Berlin and 20 landings per airfield per hour. RAF Gatow achieved one in two minutes using its two runways⁵⁶ and in May 1949 a third runway was started there. In actuality, weather, runway and taxiway maintenance and blockages reduced the figure.⁵⁷ (US standards for runway maintenance appeared to have been higher⁵⁸ although the poor state of Tegel's runway - built and operated by the Americans in the French Sector - was affecting British tail wheeled aircraft⁵⁹). The best rate overall occurred during the specially orchestrated 'Easter Parade' on 16 April when there were 1,398 Airlift landings at the three Berlin airfields.⁶⁰ Thus even at the end of the Blockade neither the average deliveries per day nor a one-off event had reached the saturation point calculated by the Americans. Moreover, as the next two sections will show, the CALTF airfield capacity in the Northern and Southern Zones would only have become sufficient for 475 aircraft after completion of the civil engineering at RAF Luneburg and Fuhlsbittel.⁶¹

⁵⁴ AP3257, pp. 526, 529.

⁵⁵ AP3257, pp. 23, 28, 289, 324; TNA: AIR 2/10064, E.175 - part of Es:172-178 Williams 21 April 1949 and attachments; AIR 20/6892, Cannon/Williams Appraisal 14 February 1949; Tunner, p. 174. This equates to 3 trips per day per aircraft available on base and at 60% serviceability 5. Set against the theoretical ceiling of 6 trips daily per aircraft, 475 aircraft implies a 51% utilization rate. At the Cannon/Williams target of 65% and 6 trips daily, 369 aircraft would have been required but such utilization rates across 1st ALTF do not appear credible on a regular basis.

⁵⁶ AP3257, pp. 157, 320.

⁵⁷ AP3257, Apps. E, L; John Fox, 'Cold War Warm Climes' part of the 'Support of Air Operations' Symposium, *Royal Air Force Historical Society Journal*, No. 51 (Witney: Windrush, 2011) pp. 46-50 indicated in his presentation that runways were shut down for about an hour a day at RAF Gatow for repairs; Arthur Percy, *Berlin Airlift* (Shrewsbury: Airlife, 1997) p. 56; TNA, AIR 2/10063, E.46 Cannon/Williams 22 December 1948 gave landings saturation figures 'for some weeks' of 480 at Tempelhof, 360 Tegel whilst working up, and 380 RAF Gatow whilst one runway closed for repairs.

⁵⁸ *Berlin Airlift: A Summary*, p. 78 citing RAF Fassberg and RAF Celle specifically.

⁵⁹ AP3257, p. 235.

⁶⁰ AP3257, pp. 148, 292.

⁶¹ AP3257, Apps. E, K-4, L, pp. 148, 152, 157, 235, 292, 320, 324, 326; *Berlin Airlift: A USAFE Summary*, p. 78 citing RAF Fassberg and RAF Celle specifically; Percy, *Berlin* Footnote continues on next page.

British aircraft were not superfluous from the strict logistics angle. They were needed to meet the tonnage totals. Even if this had not been true, maintaining the support of the western Berliners was imperative. The citizens were living close to the margins, with 43,143 unemployed and 67,219 on short time owing to the Blockade.⁶² The Airlift system was nowhere near its routine saturation point of 1,440 deliveries per day and for the British to have withdrawn would have provided the Soviets with a major source of propaganda.⁶³

COULD THE AMERICANS HAVE DEPLOYED MORE RESOURCES?

Tunner wrote in September 1948 that 'Should as many as 400 C-54's be placed in the operation [plus 100 in the 1,000 hour inspection in the USA] participation by the British would be limited to ground support'.⁶⁴ This section addresses whether the Americans had sufficient resources to have replaced the British airlift aircraft with their own. The circumstances under which this might have occurred are hypothetical but not beyond rationality. The French Air Force's airlift was limited, of short duration, and only supported France's garrison in Berlin. It comprised 424 trips delivering 881 tons and carrying 10,367 passengers (the latter mainly outbound from Berlin). The aircraft were few in number and of several types. They operated from RAF Wunstorf, RAF Buckeburg and a French airfield at Baden-Baden.⁶⁵ By the end of September 1948 the French ceased to participate in the Airlift and their garrison

Airlift, p. 56; Tunner, p. 174; TNA: AIR 2/10064, Es:172-178 Williams 21 April 1949 and attachments; AIR 20/6892, Cannon/Williams Appraisal 14 February 1949.

⁶² Barker, pp. 59-60.

⁶³ TNA: FO 1012/569, Es:2-8 C.S.(P)12 Third Edition and FO 1012/571, Es:2-6 C.S.(P)14 Command Section Ferguson 17 February 1949 on importance of maintaining civilian morale.

⁶⁴ AFHRA, IRISNUM 1038197, 'History of the Airlift Task Force (Prov.): September 1948', Tunner 28 September 1948.

⁶⁵ Miller, *To Save a City* (Texas A&M) pp. 74-75; François Pernot, 'The Berlin Airlift and the French Air Force', for a symposium organized by USAF, AHB and the City of Berlin in April 1998, narrative held by AHB with further papers in French; François Pernot, 'Un succès politique et diplomatique', Helmut Trotnow, and Bernd von Kostka, coordinators, *Die Berliner Luftbrücke – Ereignis und Erinnerung* (Berlin: Frank and Timme, 2010) pp. 67-69. In January 1949 the British thought that the French should make 'some contribution' to the Airlift using their Bristol Freighters but the idea was not carried forward as that type of aircraft was withdrawn from the Civil airlift - TNA, T 236/1026, Es:20-22 Serpell 5 January 1949 and E.55 Crawford 8 January 1949.

and the Berliners in their sector were supplied by the Americans.⁶⁶ Photographs of French participation appear regularly in secondary sources because the Armée de l'Air deployed indigenously manufactured Junkers Ju-52s, the aircraft used by the Luftwaffe at Stalingrad.⁶⁷

Whilst the Anglo-Saxon personnel spoke approximately a common language, the British also had a miscellany of aircraft type albeit in rather larger numbers once the smaller civilian types were withdrawn.⁶⁸ The RAF small twin-engine Dakotas remained in use and made up its largest component numerically. They were the first to be grounded to make way for the larger four-engine aircraft when poor weather or other factors reduced corridor capacity.⁶⁹ It is not unreasonable, therefore, to examine whether the Americans could have replaced the British leaving the latter's place in Airlift history as the provider of airfields and their associated ground support (and for secondary sources, the supplier of photographs of RAF Short Sunderland flying boats operating from the Havel-See during the autumn of 1948 such as that at Photograph 13 above⁷⁰).

HQ BAFO Air Staff recorded that 'It is understood that the Americans have plans for increasing numbers and size of aircraft. There may come a time when we will become an embarrassment rather than an asset'.⁷¹ Barker was not employed to speculate about potential British redundancy when writing the 1949 account of the British contribution that HMSO published for public consumption. Nevertheless, he too must have grasped the reality when he wrote: 'Let it be said at once that the Americans, with more and larger aircraft, carried the major part of the tonnage

⁶⁶ Harrington, *The Air Force can Deliver Anything*, pp. 109-110; Miller, *To Save a City* (Texas A&M) p. 75; TNA, AIR 28/1034 recorded handling French aircraft as 'normal airport traffic' (as opposed to Airlift) until the end of December 1948. USNA, Record Group 319, Army Staff, Plans and Operations Division, Decimal File 1946-1948, Box 118, 'French Air Assistance' HAB undated.

⁶⁷ Miller, *To Save a City* (Texas A&M) p. 76; Percy, *Berlin Airlift*, p. 40 - collision of two Ju-52s at RAF Wunstorf.

⁶⁸ AP3257, pp. 156, 223-224, 231, 246.

⁶⁹ AP3257, pp. 23, 156; TNA, AIR 2/10063, Es:47-48 Cannon/Williams 22 December 1948.

⁷⁰ Sunderlands were a great morale booster to the Berliners - 'Freddie' Rainsford and Paul Wood, 'The Berlin Air Lift 1948-1949', *The Proceedings of the Royal Air Force Historical Society*, Issue No. 6, September 1989 (Bristol: Top Copy, 1989).

⁷¹ TNA, AIR 55/218, Es:189-190 Air Staff 13 January 1949.

through the air; that the British, placed nearer to Berlin geographically, undertook the major part of the work on the ground.⁷² Not that the British effort on the ground was trivial.⁷³ By the 14 May 1949 the Northern Zone was despatching 59% of the tonnage hauled (61% of which was flown by USAF aircraft from RAF Fassberg and RAF Celle)⁷⁴ and by 15 May 1949 RAF Gatow was receiving 34% of the freight delivered to Berlin for the western Berliners⁷⁵.

The question of the US capability to replace the British aircraft involves investigating a number of parameters. The thesis has assumed that the additional resources would be based on airfields nearest to Berlin and close by the C-54s located at RAF Fassberg and RAF Celle. The logic of this assumption is clearly shown by using the HQ CALTF corridors allocated in 1949. The round trips were 244 and 256 nautical miles respectively whilst from Wiesbaden AFB it was 536 and from Rhein-Main AFB 524.⁷⁶ Thus it was necessary to determine if there was enough capacity on the Northern Zone airfields to permit this.

A second assumption was that the Americans would have continued their strategy of a military airlift using one aircraft type (the Skymaster) augmented by a handful of C-82 specialist end-loading aircraft for abnormal indivisible loads and the occasional deployment of 'very heavy transports'⁷⁷ on trial.⁷⁸ Subsidiary examinations of alternative strategies involving an American civil airlift and multiple aircraft types are touched on at the section's end.

Whilst the Americans were the coal specialists, as time progressed the Civil Lift

⁷² Barker, p. 6.

⁷³ TNA, AIR 28/1034, ORB 12 May 1949 'Message from British Commandant'.

⁷⁴ TNA, AIR 55/110, BAFO Form STATS 120 1 May to 14 May 1949.

⁷⁵ TNA, AIR 20/7285, ALREP 16 May 1949 8-15 May 1949 Statistics - 'Tonnages and Sorties'.

⁷⁶ See thesis, Table 5.9.

⁷⁷ TNA, AIR 2/10064, Es:174-178 Tunner undated.

⁷⁸ AP3257, pp. 284-5; *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 207; *Berlin Airlift: A USAFE Summary*, pp. 11, 20, 72, 103 114. A Douglas C-74 VHT and separately a Boeing C-97 VHT were used for short periods and 5 C-82 rear loading aircraft were deployed for abnormal loads.

gained a monopoly handling liquid fuel in bulk as Table 6.4 reveals.⁷⁹ In May 1949 13,504 short tons of diesel, 2,607 of gasoline and 1,797 of kerosene were hauled at an average of 578 tons per day.⁸⁰ Thus before calculating what additional resources would have been needed to replace the British, the 'wet fuel' aspect needs special examination.

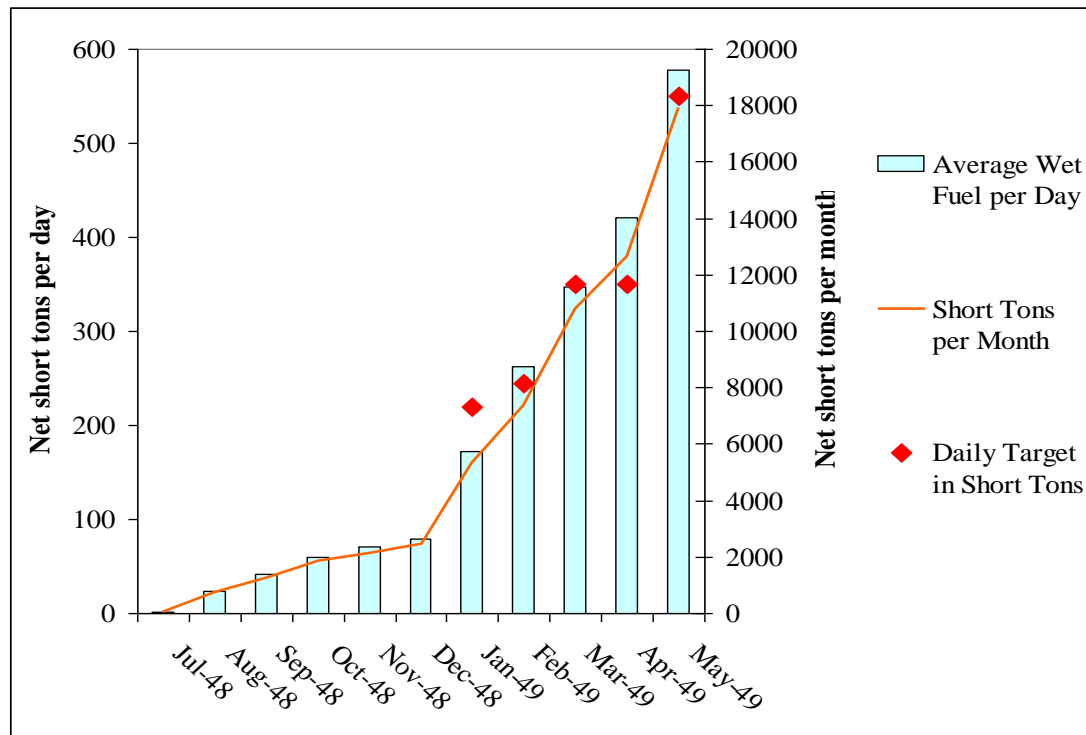


Table 6.4: British Civil Wet Lift

As the initial reserves of liquid fuels were consumed, the Anglo-Americans resupplied by air. The Americans used 55 US gallon metal drums.⁸¹ The Hump had given them an appreciation about hauling liquid fuel (see Chapter 3) both in Consolidated C-109's tankers (modified Consolidated B-24 four-engine heavy bombers) and drums. The USAF no longer had these tankers and it had only 11 of the bombers left.⁸² The Americans and the British would have been aware that using

⁷⁹ AP3257, pp. 199-201, 216, 228, 233-234, 521.

⁸⁰ TNA, AIR 20/2071, 'Civil Airlift Monthly Report No. 5 - May 1949' Whitfield 9 June 1949.

⁸¹ AP3257, p. 199; Miller, *To Save a City* (Texas A&M) p. 155.

⁸² Department of the Air Force, Operations Statistics Division, *United States Air Force, Statistical Digest 1948 Third Edition* (Washington DC: US Government, undated) Table 18, p. 22, 31 March 1948.

drums was inefficient as they were heavy (365 lb each), hard to handle in the confined space of an aircraft's fuselage, difficult to stow once on board, and the contents were volatile. The empty drums had to be stored separately, steam-cleaned, and back loaded.⁸³

The first bulk fuel delivery was made by the specialist company Flight Refuelling on 27 July 1948.⁸⁴ Between October 1948 and the end of January 1949 the civilian Wet Lift expanded but failed to meet its targets.⁸⁵ Alternative solutions had to be considered and in January 1949 the RAF used 18 Hastings flights to carry gasoline into Berlin. Each one carried circa 800 imperial gallons in 40 gallon 'barrels' (equivalent to 55 US gallons).⁸⁶ Jerry cans were also considered owing to an insufficiency of barrels with a load of three to five net short tons per flight being anticipated.⁸⁷

At the start of January 1949 the Wet Lift contractors had deployed only 11 tankers instead of the 31 ordered and even at the end of January 1949 they were 4 aircraft light.⁸⁸ The force then rose to a peak of 42 aircraft.⁸⁹ As with other aspects of the

⁸³ AP3257, pp. 199, 302; Cox, 'Britain and the Berlin Airlift', p. 32; Lay, 'Berlin Air Lift: Part 2', pp. 10, 53, 155; Miller, *To Save a City* (Texas A&M) p. 155; TNA: AIR 2/10063, E.37 BAFO AOX65 13 January 1949; T 236/1025, E.97 Berlin No. 1296 Basic 8 September 1948, E.175 FO (German Section) No. 2113 Basic 21 September 1948, E.177 Berlin No. 1512 Basic 21 September 1948.

⁸⁴ AP3257, pp. 215, 221; Richard K. Smith, *Seventy-Five Years of Inflight Refuelling*, Air Force History and Museums Program (Washington DC: US Government, 1998) pp. 15-17, 23.

⁸⁵ AP3257, pp. 223-226, 521; TNA: AIR 2/10063, Es:21-26 Meeting 18 January 1949; examples: AIR 20/7284, ALREPs 20-24 January 1949 (cited 19 landings); T 236/1026, E.17 Berlin No. 51 Basic 5 January 1949, Es:44-45 FO (German Section) No. 110 Basic 7 January 1949, E.48 FO (German Section) No. 110 Basic 7 January 1949, E.111 FO (German Section) No. 389 Basic 22 January 1949.

⁸⁶ Victor F. Bingham, *Handley Page Hastings and Hermes*, (Peterborough: GMS Enterprises, 1998) p. 38.

⁸⁷ TNA, AIR 2/10063, E.37 BAFO AOX65 13 January 1949. Other containers were considered including 20 gallon drums and 5 gallon square cans - TNA, T 236/1025, E.94 Berlin No. 1901 Basic 20 September 1948 and E.100 Berlin No. 1331 Basic 9 September 1948. TNA, AIR 20/7805, Dangerfield and Waite documents spanning between 23 September 1948 and the note at 5 October 1948 covering a range of options to transport diesel.

⁸⁸ AP3257, pp. 199, 225-226.

Civil Lift, costs were necessarily important to the Treasury.⁹⁰ Liberators were ordered in January 1949 when the Wet Lift was not performing well because they had a good payload and were cheap⁹¹ whilst an experimental Avro Lincoln replaced two Tudors when these were withdrawn at the end of May 1949 because the contractor would not accept the money being offered⁹². On the other hand, revised contracts were eventually agreed in May 1949 and these motivated contractors to increase their aircrafts' available payloads.⁹³

The RAF refused to become involved in questions about contract pricing:

The Treasury, not unnaturally, began to worry about the cost of hiring this large miscellaneous fleet of civil aircraft and were continuously pressing me to state what would be a reasonable cost to pay per hourI refused absolutely to get involved..... there was no way we could participate in any sort of cost control exercise.I felt that the cost would have to be sorted out afterwards by better qualified people, but the urgent requirement to sustain the citizens of Berlin and our own forces there could not be assessed now in pounds and pence. No doubt many charter companies made a great deal of money out of the airlift.....⁹⁴

By spring 1949 the civil Wet Lift was performing sufficiently well for it to be the

⁸⁹ AP3257, p. 302. TNA, AIR 20/2071, Table 'Civil Aircraft Statistics' April 1949 and May 1949 displayed well the numerical difference between aircraft under contract and those operating in Germany. Peaks cited in the different AP3257 reports:

Type	CALTF Report p. 302	No. 46 Gp. Report p. 199	Civil Airlift Report p. 243 (average for May 1949)
Lancastrians	16	14	14
Tudors	7	7	7
Halifaxes	17	17	13
Liberators	2	2	2
Total	42	40	36

⁹⁰ TNA, T 236/1026, E.116 to Serpell 25 January 1949, Es:222-226 28 February 1949 meeting.

⁹¹ AP3257, pp. 231-232.

⁹² AP3257, p. 235.

⁹³ AP3257, p. 232.

⁹⁴ Rainsford, *Memoirs*, p. 110. On profits, also H. S. L. Dundas, 'Big Money', *Sunday Express*, 6 February 1949.

Airlift's sole carrier of diesel, gasoline and kerosene.⁹⁵ In April 1949 despite the extra time taken to load and offload the cargo⁹⁶, the Wet Lift was achieving substantially more sorties per aircraft per day than the RAF although only two thirds of the RAF Celle C-54 average.⁹⁷ The daily target grew as power stations and industry converted to diesel or diesel assisted firing to benefit from its better thermal value per ton. Such was the eventual success of the Wet Lift that had the Blockade continued there was a proposal to replace domestic coal with kerosene (which had a higher thermal value than coal and 'none [of the heat] goes up the chimney'⁹⁸) even though this would have involved supplying 500,000 stoves.⁹⁹

The aircraft were a miscellany of types run by a number of companies.¹⁰⁰ Many of the modifications to fit the tanks had been "quick fixes" that in the event were not quick to install.¹⁰¹ There were different arrangements to carry fuel (even across the same aircraft type); different couplings to connect to the loading and unloading systems, and limitations on the products that could be carried.¹⁰² In some cases,

⁹⁵ AP3257 pp. 231, 233.

⁹⁶ AP3257, pp. 199-201, 302.

⁹⁷ TNA, AIR 55/98, Es:21-22 part of undated draft report, E.44 part of Charlesby 15 February 1948.

⁹⁸ AP3257, p. 228 cited 77 short tons of diesel equalling 110 of coal; G. W. C. Kaye, and T. H. Laby, '3.11.4 Calorific values of solid, liquid and gaseous fuels', *Tables of Physical and Chemical Constants*, web edn. (National Physical laboratory Teddington) <www.kayelaby.npl.co.uk/chemistry/3_11/3_11_4.html> [accessed 22 January 2013] stated that general purpose coal had a gross calorific value/MJ kg⁻¹ value of 32-42 whilst kerosene was 47; TNA: AIR 20/6892, Bourne 3 March 1949 indicated that 40,000 metric tons of kerosene would replace 100,000 metric tons of brown coal; AIR 2/10064, E.292 BAFO AOX 478 21 March 1949 (for quotation). TNA, T 236/1026, E.93 FO (German Section) No. 165 Basic 18 January 1949, bottled gas was similarly explored as a lighter weight means than coal to provide gas.

⁹⁹ AP3257 p. 228; Bob Clarke, *10 Tons for Tempelhof: The Berlin Airlift* (Stroud: Tempus, 2007) p. 158; TNA: AIR 20/6893, Meeting in Mr Seal's Office 6 April 1949, Interdepartmental Working Party 26 April 1949; AIR 20/7829 generally for range of products carried; AIR 24/1807, Air Staff January 1949; AIR 55/218, Es:147-148 Charlesby 18 March 1949; FO 1012/569, Es:2-8 C.S.(P)12 (Third Edition) paragraphs 23-25; FO 1012/571, Es:2-6 C.S.(P)14 Command Section Ferguson 17 February 1949; T 236/1025, E.97 Berlin No. 1296 Basic 8 September 1948, E.165 Playfair 18 September 1948; T 236/1026, E.230 FO (German Section) No. 1136 Basic 10 March 1949.

¹⁰⁰ AP3257, pp. 194-195, 200-201, 231, 243.

¹⁰¹ AP3257, p. 225.

¹⁰² AP3257, pp. 227, 231-232, 587.

tanks were overly heavy, leaked or split.¹⁰³ Some tank installations prevented particular fuels being hauled. Rubberized ones dissolved if products other than gasoline were carried whilst some Halifax installations, for example, were prohibited from carrying gasoline.¹⁰⁴ Had the Blockade continued it was intended that future Tudor Mk IV conversions should be capable of operating in both wet and dry roles.¹⁰⁵ Turn round times were extended by the specific needs of bulk fuels and loading from and offloading into road tankers or bulk fuel installations with limited numbers of fixed standpipes and insufficient pumping capacity.¹⁰⁶ On-board tanks had to be emptied before reuse to prevent over-filling.¹⁰⁷

SOPs had to be strictly observed. These included when tank cleaning was necessary. Indeed avoiding cross-contamination of petroleum products remained a challenge throughout the Wet Lift. It was a problem that extended from the ports of discharge to the customers in Berlin and the dangers involved to the end-users were heightened when AVGAS was involved.¹⁰⁸ It was not simply the requirements of western Berlin that necessitated handling of large quantities of liquid fuels. In May 1949 the British consumed 11,944 long tons of AVGAS¹⁰⁹ and the Americans nearly 13 million US gallons (circa 35,000 long tons).¹¹⁰ In terms of tonnage, three times as much AVGAS was used in May as petroleum products were delivered to Berlin by the Wet

¹⁰³ AP3257, p. 200.

¹⁰⁴ AP3257, pp. 200,-201, 227, 575; TNA: AIR 20/2071, HQ Civil Airlift Division unnumbered telegram 2 May 1949; AVIA 54/416, Caygill 11 April 1949 and Meeting 4 April 1949 - potential limitation on configurations for some Tudor marks.

¹⁰⁵ TNA: AIR 20/7820, Collins 11 April 1949; AVIA 54/416, Caygill 4 April 1949, Meeting 4 April 1949.

¹⁰⁶ AP3257, pp. 200-200, 226-227, 234, 563, 587; TNA, T 236/1025, E.206 Berlin No. 1659 Basic 1 October 1948, E.208 FO (German Section) No. 2322 Basic 2 October 1948, E.213 Smith 4 October 1948.

¹⁰⁷ AP3257, pp. 227, 587.

¹⁰⁸ AM, AP3160: *RAF Manual of Fuels, Oils and Lubricants*; AP3257, pp. 45, 587; TNA, FO 1077/4, CAATO Notes on Conference 6 April 1949.

¹⁰⁹ AP3257, pp. 52-53, 541. Page 53 gave the quantity issued as against that consumed as 12,222 tons. The average monthly consumption in BAFO the year before had been approximately 1,630 tons - AP3257, p. 52.

¹¹⁰ Lay, 'The Berlin Airlift: Part 2', pp. 105-106.

Lift.¹¹¹

The Wet Lift was based at RAF Schleswigland, RAF Wunstorf and Fuhlsbuttel.¹¹² An efficient Wet Lift required more than aircraft. It needed specialist equipment to store, to load and offload quickly, and to transport fuel.¹¹³ Such an installation was inherited from the Luftwaffe at RAF Schleswigland but needed extension to handle diesel.¹¹⁴ A better version was built by the Army at RAF Wunstorf which came into use in April 1949. Before then arrangements had been primitive.¹¹⁵ Had the airlift continued a version of the Wunstorf installation would have been constructed at Fuhlsbuttel.¹¹⁶ 14,233 tons were loaded at Fuhlsbuttel, 23,985 at RAF Schleswigland, and 54,175 at RAF Wunstorf.¹¹⁷ In Berlin purpose-built offloading facilities were built at RAF Gatow (managed by Shell Deutsche) and at Tegel (by Standard Oil) but not at Tempelhof.¹¹⁸ At RAF Gatow a 3km pipeline was built from the airfield fuel farm to the loading stage on the Havel-See to permit water-borne onwards transfer.¹¹⁹ As at 11 April 1949 the pipeline at Tegel was not in use.¹²⁰ By late May 1949 Merer estimated that if RAF Gatow and Tegel each had two pipelines in operation Berlin would be capable of receiving up to 1,900 short tons per day (although allowing for the product-split this figure would have been lower).¹²¹ Whilst there were advantages in using the relatively efficient bulk fuel installations at specific airfields, it reduced operating flexibility.

¹¹¹ AP3257, p. 521.

¹¹² AP3257, p. 199.

¹¹³ AP3257, pp. 199-200, 587; K. W. McQueen, 'Use of Tanker Aircraft in Operation "Plainfare"', *The Royal Army Service Corps Review 1948*, Vol. 1, No. 1.

¹¹⁴ AP3257, pp. 199, 267.

¹¹⁵ AP3257, pp. 199, 226, 234, 264.

¹¹⁶ AP3257, pp. 199, 226, 234, 268, 302; TNA, FO 1014/829, MacGregor 30 August 1949.

¹¹⁷ D. J. Sutton, ed.-in-chief, Brig, *The Story of the Royal Army Service Corps and Royal Corps of Transport 1945-1982* (London: Leo Cooper, 1984) pp. 110-111. The fuel figures quoted are Sutton's and were 111 tons less than the BAFO total at AP3257, p. 521.

¹¹⁸ AP3257, pp. 227, 302, 563; TNA, AIR 20/7822, Palmer 28 July 1949 including attachment 'Method of Off Loading'.

¹¹⁹ AP3257, pp. 226-227.

¹²⁰ AP3257, p. 200; TNA, AIR 20/7820, Collins 11 April 1949.

¹²¹ TNA, AIR 38/302, Merer minute sheet 24 May 1949.

Table 6.5 summarizes the capability of the aircraft types contracted for the Wet Lift. The tonnage figures are generic for the aircraft type, not for a particular tank installation or petroleum product.¹²² In some cases the authorised payload (and thus potential cargo capability) increased over time.¹²³ BAFO, No. 46 Group, the Civil Airlift Division, CALTF and AATO gave different capacity figures in their reports in *AP3257*.¹²⁴ Table 6.5 uses the latter's figures as they recognized the different specific gravities of diesel, 'MTGas' (i.e. 80 octane gasoline) and kerosene and thus if the aircraft had sufficient capacity, the gallons that could be carried. For example, using Tudor tanker figures, the maximum capability for heavier diesel was recorded at 2,083 imperial gallons and at 2,331 for lighter MTGas. The variety in the table also indicates the problems faced by planners, tasking authorities and those filling and unloading each individual aircraft.

<u>Type</u>	<u>Peak Number</u>	<u>Tonnage - short tons</u>	<u>Capacities (Imperial Gallons)</u>
Avro Lancastrian	14 ¹²⁵	8.1 - 9.3 ¹²⁶	2,114 - 2390
Avro Lincoln	1	9.4	2,202 - 2,533
Avro Tudor	7	8.4 - 8.9	2,083 - 2,331
Consolidated Liberator	2	6.6 for one aircraft, 9.1 for the other	One at 1532 - 1,666, the other at 2,450
Handley Page Halifax	17	5.6 - 7.7	1,370 - 2075

Table 6.5: British Wet Lift Fleet¹²⁷

¹²² TNA, AVIA 54/416, covering Tudor wet fuel capacities, and aircraft marks and fuel tank configuration installed.

¹²³ *AP3257*, p. 232.

¹²⁴ *AP3257*, pp. 15, 195, 199-201, 232, 244, 284, 302, and 575; E. P. Whitfield, [Manager Civil Airlift Division] *Civil Airlift Operation PLAINFARE 4 August 1948 - 15 August 1949* (Luneburg: Control Commission for Germany, forward dated 5 September 1949).

¹²⁵ *AP3257*, the No. 46 Gp. Report cited 14, the CALTF one cited 16.

¹²⁶ This would have been the peak for Lancastrian capacity - TNA, AIR 20/7820, Collins 11 April 1949. For May 1949 Whitfield reported that most were still operating at 6.6 short tons - TNA, AIR 20/2071, Whitfield 9 June 1949.

¹²⁷ The Civil Airlift statistics show that during the Airlift and across the marks and operators the average cargo was 7 short tons with the Halifax at 6.2; Lancastrian 6.6; Liberator 7.1; Footnote continues on next page.

'The British excelled in hauling specialized commodities such as liquid fuels.'¹²⁸ Even though the Wet Lift became effective, becoming a major Airlift success, its efficiency was still improving as the contracts were terminated. Planning for the long term Wet Lift fleet had not been finalised when the blockade was lifted.¹²⁹ Targets were uncertain because of the possible need to haul more kerosene.¹³⁰ A number of options were under discussion including a fleet of Avro Tudors and Avro Lancastrians operated by the three most effective companies to meet a daily target of 550 net short tons.¹³¹ The usual friction between operational efficiency and cost was reflected in counter-arguments for retaining, even increasing, the less efficient Handley Page Halifax population.¹³² It should not be overlooked that had Governmental priorities been different, there could have been another less expensive source of bulk fuel carriers. As identified in Chapter 5, the RAF's four-engine bomber force was small but it consisted of Avro Lancasters and Lincolns¹³³, both of which in civilianized format were used by the Wet Lift.

The Wet Lift was an important niche activity but in terms of the total daily Airlift tonnage the quantities were small. Given the issues involved in hauling liquid fuel and the advantages of using the relatively efficient fuel installations at specific airfields, the Americans might have preferred the British civilian Wet Lift to have continued. That said, 1st ALTF and the RAF did haul 1,000 tons of less volatile asphalt in 400lb drums to build and maintain airfields.¹³⁴

The data for the USAF C-54s based at RAF Fassberg and RAF Celle had been

Lincoln 9.5; Tudor 8.5 and a civilian York 8.4 - *AP3257*, p. 244. Dry lift Tudors could haul up to 22,000lbs - *AP3257*, p. 15 and TNA, AVIA 54/416, King 12 May 1949.

¹²⁸ *Berlin Airlift: A USAFE Summary*, p. 14.

¹²⁹ *AP3257*, p. 233.

¹³⁰ *AP3257*, p. 231; TNA: AIR 20/6893, Meeting in Seal's Office 6 April 1949; AIR 20/7820, FO 1636 Basic 8 April 1949; AIR 20/7820, FO 1444 Basic 29 March 1949.

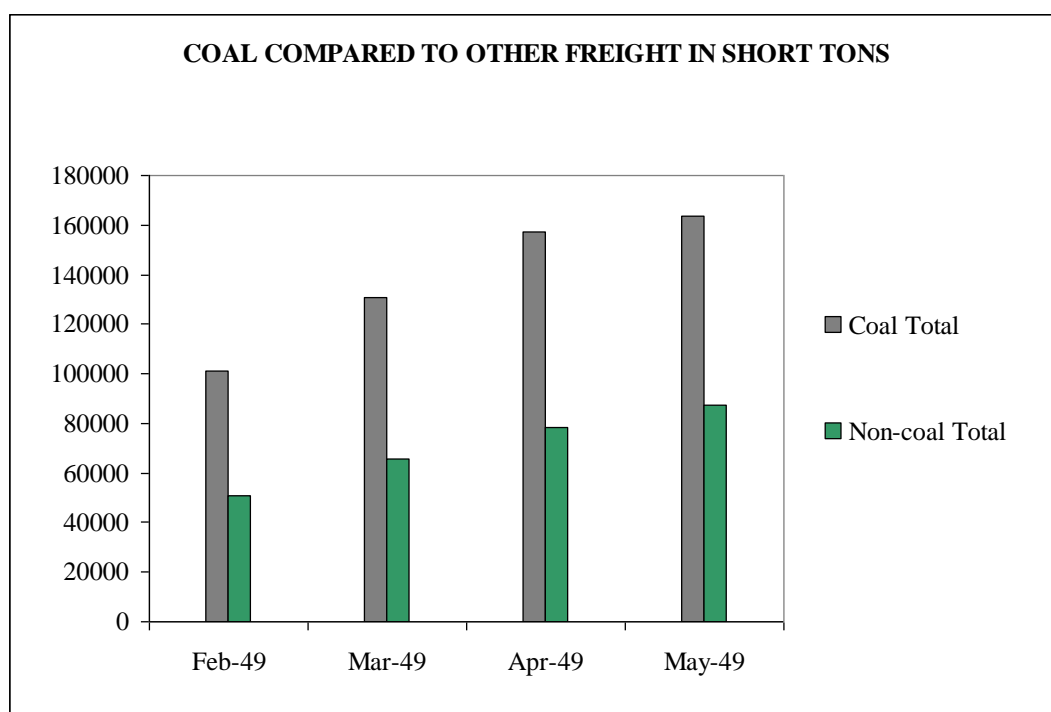
¹³¹ *AP3257*, p. 231; TNA: AIR 20/6893, Apps: A(2) and B to 6 April 1949 Meeting in Mr Seal's Office; AIR 20/7820, HQ BAFO AOX 541 1 April 1949.

¹³² TNA, AIR 20/6893, Interdepartmental Working Party 26 April 1949, Meeting in Seal's Office 6 April 1949, James 20 April 1949.

¹³³ TNA, AIR 22/383.

¹³⁴ *Berlin Airlift: A USAFE Summary*, pp. 31, 78; TNA: AIR 20/7285, ALREP 7 May 1949 Pt. II; FO 1030/62, HQAATO DECY2305 12 February 1949.

earmarked for calculating the additional resources needed to replace the British. However, RAF Fassberg was 'in danger of coming apart' owing to friction between senior USAF officers and the RAF station commander and poor morale amongst the personnel. Colonel Theron 'Jack' Coulter (USAF) took sole command on 7 March 1949 and Charlesby recorded that it was 'recovering' in April 1949 and as efficient as RAF Celle in May.¹³⁵ Similar issues did not occur at RAF Celle. RAF Fassberg specialized in a single cargo, coal, whereas, as the three tables comprising Table 6.6 show, proportionally the British carried more varied loads, especially foodstuffs. 90% of RAF Celle's load was coal and the rest was food which whilst still coal intensive was more varied. Thus, its statistics are used in this section.¹³⁶



¹³⁵ AP3257, p. 382; T. Ross Milton, 'Inside the Berlin airlift: fifty years later, the Task Force Chief of Staff reflects on Operation Vittles', *Air Force Magazine*, Vol. 81, No. 10, October 1998, Arlington VA; Tunner, p. 210; TNA, AIR 28/1029, RAF Fassberg ORB.

¹³⁶ AP3257, pp. 519, 521; Daniel F. Harrington *Berlin on the Brink: The Blockade, The Airlift and the Early Cold War* (Lexington Ky: University of Kentucky, 2012) p. 146; USAF *Statistical Digest Jan 1949 - Jun 1950*, Table 207.

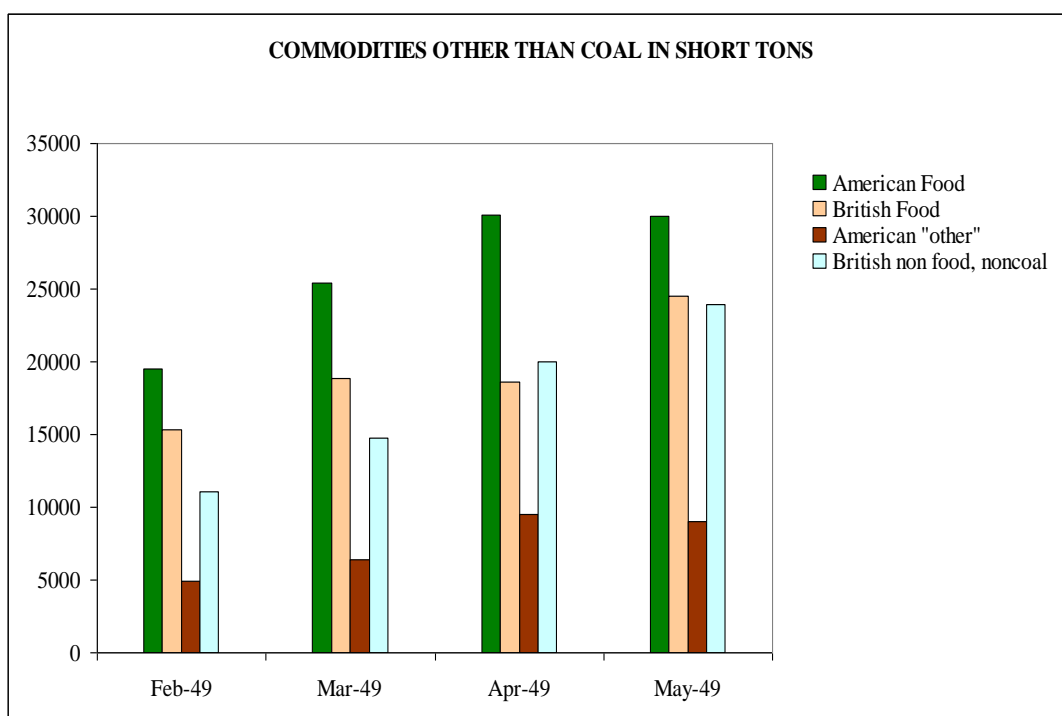
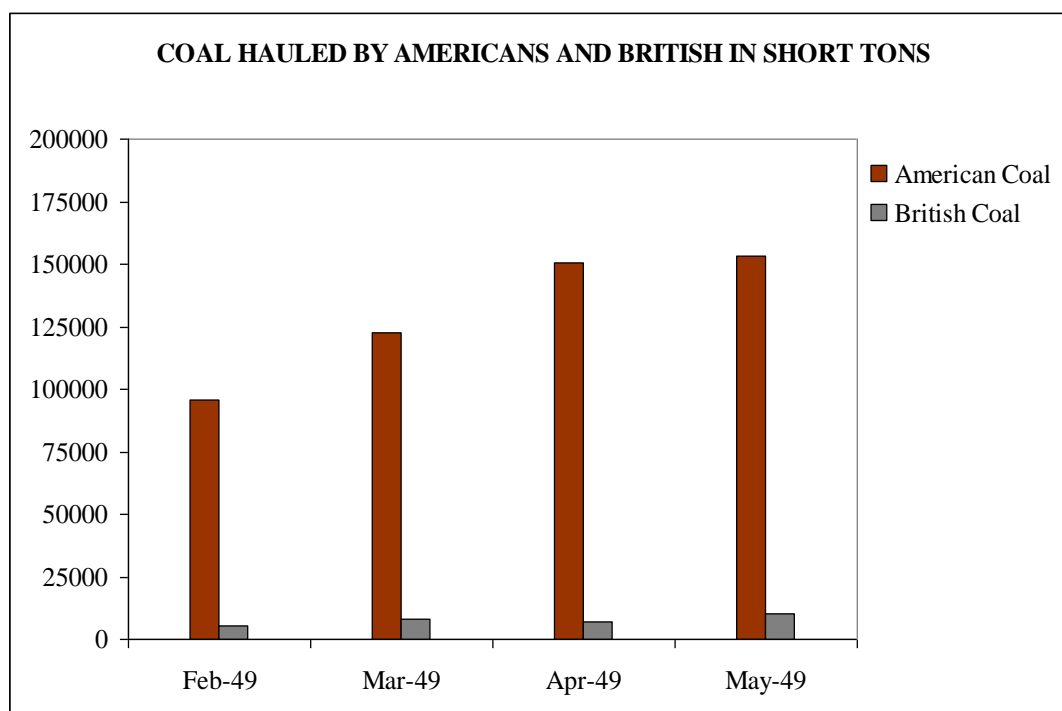


Table 6.6: Commodities Lifted by Nation

The commodities hauled by the British were not spread evenly across the bases. Besides the specialist airfields for the Wet Lift, the Dakotas handled much of the German economic freight, including mail and the rolls of newsprint and RAF

Wunstorf hauled over 99% of British 'Services account' consignments.¹³⁷ As shown in Table 4.2 about two thirds of the food hauled was flour, dehydrated potatoes and cereals all of which were, like coal, capable of being transported in standard sacks once the demand side of the supply equation allowed the purchasers more power to stipulate contract conditions.¹³⁸ Thus food, whilst not as uniform as bags of coal, would not have been as hard to handle as might be perceived.

Statistics were not recorded routinely for British turn round times at their bases.¹³⁹ Samples were taken during short periods for specific purposes. Fourteen aircraft were sampled at RAF Wunstorf on 19 November 1948. Charlesby was very cautious about the resultant average figures hinting that circumstances made it better than normal.¹⁴⁰ The April 1949 study sampled loading times at RAF Celle (18 minutes), RAF Fassberg (14 minutes), RAF Schleswigland's Hastings (between 18 to 25 minutes), and RAF Wunstorf's RAF Yorks (between 30 to 40 minutes) with the cryptic comment 'more difficult' loads.¹⁴¹ It is true that there were difficult loads carried by both the Americans and the British¹⁴² - typically abnormal and indivisible ones in road haulage terms¹⁴³. However, the phrase was also used in British records to describe mixed load consignments with a variety of packaging and especially packages that were harder to manhandle or to stow. The perceived antithesis was a cargo dedicated to coal.

In April 1949 during studies into RAF utilization Charlesby found that RAF Gatow

¹³⁷ Sutton, pp. 110-111.

¹³⁸ TNA: WO 291/1056, Department of the Scientific Adviser to the Army Council, Army Operational Research Group, Report No. 8/48, Time and Motion Study of Air Supply (Operation PLAINFARE) paragraphs 23-46; WO 291/1101, Report No. 28/49, paragraphs 16-27 and App. A.

¹³⁹ AP3257, p. 384.

¹⁴⁰ TNA, AIR 55/102, Charlesby 24 and 25 November 1948.

¹⁴¹ TNA, AIR 55/102, Charlesby 21 July 1949.

¹⁴² Special lifts included airfield constructional equipment and material for rebuilding the Western Berlin power station in the British sector - AP3257, pp. 65, 303; Anon, 'British Moving Equipment for New Power Plant', *The Task Force Times*, 4 February 1949; TNA: AIR 20/7814, 'Materials for Berlin West Power Station'; AIR 25/1273, App. 86; FO 1077/4, CAATO Notes on Conferences: 8, 14, 22, and 29 April 1949 and 5 May 1949.

¹⁴³ Highways Agency, 'Abnormal Indivisible Loads' <www.highways.gov.uk/> [accessed 29 July 2013].

turned round C-54s from RAF Celle at an average of 37 minutes and RAF aircraft at 38.4 whilst at Tegel the RAF Fassberg C-54s took 31.2 and the RAF 38.6.¹⁴⁴ The Army Operational Research Group recorded unloading times at RAF Gatow of 8 minutes for Yorks, 18 minutes for C-54s when carrying food and 12 minutes for the latter with coal consignments. The Group stressed the advantages of single commodity loads and the need for the capability of an aircraft type to be standardized.¹⁴⁵

Charlesby's report recorded approximate flying times for round trips with RAF Celle and RAF Fassberg at 110 minutes, RAF aircraft at RAF Wunstorf 125 minutes and at RAF Schleswigland 155 minutes. Thus the flying time for a Wunstorf initiated trip was 14% greater than a Celle one.¹⁴⁶ The report contained a chart on graph paper that compared the three aircraft types and four bases. Based on flying time, loading and refuelling time, and turn round at Berlin a return trip from RAF Wunstorf took 20% longer than from RAF Celle.¹⁴⁷

Neither RAF Lubeck nor the Civil Lift was sampled. One Skymaster trip would have hauled the equivalent of "2¾" Dakotas and thus its turn round times at Berlin and its base should have been noticeably less than the total for the Dakotas it would have replaced. It is uncertain how the longer loading times for RAF Yorks at RAF Wunstorf would have translated to American aircraft hauling similar loads. The speeds of the Fuhlsbüttel, RAF Schleswigland and RAF Wunstorf aircraft were set at 160 knots outbound to Berlin and 180 on the return flight. These were faster than the C-54s at RAF Celle and RAF Fassberg by 12 and 23 knots respectively and 35 and 45 knots better than the RAF Lubeck Dakotas. Transit altitudes for the latter were also the highest further extending their flight times.¹⁴⁸

If Skymasters had been based at RAF Schleswigland and the extant routes retained, a return flight to Berlin would have been 53% further than from RAF Celle and about

¹⁴⁴ *AP3257*, p. 384.

¹⁴⁵ TNA, WO 291/1101, Report No. 28/49, paragraph 21.

¹⁴⁶ *AP3257*, p. 382, extracted from TNA, AIR 55/102, Charlesby 21 July 1949.

¹⁴⁷ *AP3257*, p. 383.

¹⁴⁸ *AP3257*, pp. 338-341. Charlesby's round trip distances were greater than those in the 'Air Staff Instructions' with the largest disparity applying to the C-54 routes - *AP3257*, p. 382.

50 minutes longer at the authorised C-54 speeds.¹⁴⁹ However, the Skymasters that replaced the British might have been "clutched" on airfields in the RAF Fassberg area thereby avoiding such longer flights. As Chapter 5 showed, the routes employed in April 1949 disadvantaged the British. In a Skymaster-centric environment these might have been revised thereby shortening the distances for RAF Wunstorf and RAF Lubeck (Table 5.9 above).

Charlesby's sampled aircraft flew in waves within the block scheme.¹⁵⁰ A combination of relocation, fewer trips per day to achieve the same tonnage, and the concentration on Skymasters might have allowed the replacement of the blocks by the more efficient continuous flow. With so many permutations and uncertainties it was not possible to determine the aircraft overhead that needed to be added to calculations resulting from RAF Celle statistics. However, given that in May 1949 RAF Celle's 317th Troop Carrier Group was operating at a very high rate of 5.8 trips per day per serviceable aircraft, it appears likely that more aircraft would have been needed than the results in Table 6.9 below suggest.¹⁵¹

RAF Celle did not open for use until mid December 1948¹⁵² and 1st Airlift Task Force did not reach its assigned strength of 225 Skymasters until during January 1949¹⁵³. Thus the analysis in the thesis has assumed that the Americans could not have started to replace the British with C-54s until February 1949 at the earliest and this is reflected in statistics for RAF Celle's C-54s in Table 6.7.¹⁵⁴

¹⁴⁹ AP3257, pp. 338-341.

¹⁵⁰ Sutton, pp. 106-107.

¹⁵¹ AFHRA, IRISNUM 241489, CALTF Statistical Summary.

¹⁵² AP3257, p. 551.

¹⁵³ Miller, *To Save a City* (Texas A&M) p. 163.

¹⁵⁴ AFHRA, IRISNUM 241489, CALTF Statistical Summary. *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 207 did not always agree precisely with the CALTF Statistical Summary and at Rhein-Main AFB it covered only the USAF squadrons. It gave the average daily C-54s on hand at RAF Celle as 40.9, 43.1, 45.1 and 44.1 respectively and a monthly difference in tonnage of a few tons. The Table 207 figures would have increased the number of additional Skymasters needed by 4%.

<u>Month 1949</u>	<u>Average Number of C-54s Assigned</u>	<u>Total Short Tonnage Carried</u>	<u>Average Short Tons/Assigned Aircraft/Day</u>
February	39.78	30,076	27
March	42.71	37,397	28
April	43.94	44,194	33.5
May	39.94	42,935	35

Table 6.7: RAF Celle C-54 Performance

The total quantities hauled by the British airlift in the same period are given in Table 6.8.¹⁵⁵

<u>1949</u>	<u>Total Tonnage</u>	<u>Dry Lift</u>	<u>Wet Lift</u>
February	31,824	24,469	7,355
March	41,678	30,896	10,782
April	45,407	32,765	12,642
May	58,563	40,654	17,908

Table 6.8: Tonnage Hauled by British

In February 1949 the Wet Lift had yet to convince the sceptical military of its ability and the possibility cannot be ruled out that because of its past performance and the importance of its cargo, it would have been replaced before success was achieved.¹⁵⁶

Two sets of estimates are needed, one covering replacement of all but the Wet Lift and the second replacement of the British airlift totally.

Table 6.9 identifies the C-54s needed to haul the British tonnage excluding the Wet Lift based on the figures achieved by RAF Celle given in Table 6.7.

¹⁵⁵ AP3257, pp. 519, 521.

¹⁵⁶ TNA: AIR 20/2071, Whitfield 11 February 1949 about Lancashire Aircraft Corporation 'a whole farrago of excuses and alibis I cannot recall a single assurance..... which has been honoured', reinforced by Williams 25 February describing the company as 'lamentable'; AIR 20/6892, Rainsford 11 February 1949, Interdepartmental Meeting 14 February 1949; PREM 8/990, Bevin to Prime Minister 4 February 1949.

<u>1949</u>	<u>Additional C-54s (Rounded up)</u>
February	33
March	36
April	33
May	38

Table 6.9: Tonnage based calculation of additional C-54s required in 1st ALTF to replace the British airlift less its Wet Lift

The same "simple" approach could not be used for the Wet Lift and a more complex estimate had to be constructed. Again there are no statistics about turn round times. Pumping capabilities are given for the British bulk fuel installations at RAF Schleswigland and RAF Wunstorf and in a few instances other figures were recorded.¹⁵⁷ In March 1949 RAF Wunstorf allowed 40 minutes for refuelling operations.¹⁵⁸ In April 1949 the maximum delay waiting to discharge at Tegel was 18 minutes providing aircraft arrived equally spaced. Two aircraft per discharge point per hour could be handled and from 15 April the plan was to have nine points feeding four bulk fuel tanks.¹⁵⁹ The potential impact of receiving large amounts of kerosene at Berlin was not recorded other than to recognize that the capacity at Tegel could not be increased.¹⁶⁰ Whilst there were not substantiating sets of statistics, owing to the various methods of delivery and discharge, the need for product separation and quality control, the numbers of standpipes and tanks available, pumping rates and equipment serviceability, and the variety of aircraft installations and couplings, aircraft turn round times would have been longer than those for RAF Celle's C-54s.

Information exists about the Skymaster's integral fuel tank capacity and layout and some were later used as fire fighting aircraft with an external pannier (like the Halifax) filled with ten short tons of retardant.¹⁶¹ The Civil Airlift Division Report recorded the

¹⁵⁷ AP3257, pp. 199, 587.

¹⁵⁸ TNA, AIR 55/214, E.9 Bercomb Basic 1349 19 April 1949.

¹⁵⁹ TNA, AIR 55/213, E.131 Notes on a Meeting at HQ AATO 17 March 1949.

¹⁶⁰ TNA, AIR 55/213, E.131 Notes on a Meeting at HQ AATO 17 March 1949.

¹⁶¹ Buffalo Airways <www.Buffaloairways.com> [accessed 28 June 2012]; USN, 'NAVAER 1335D (Rev 1-49) Standard aircraft characteristics R5D-2 Skymaster Douglas'; Ken Wixey, *The Douglas Skymaster Family* (Stroud: Tempus, 1999) pp. 17-21.

average dry lift tonnage of a Tudor to be 9.7 short tons¹⁶² which is in line with that for a C-54 engaged on the Airlift. The estimate therefore uses the Tudor tankage figures for a hypothetical bulk fuel carrying Skymaster. Using the upper gallonage figures for Tudors¹⁶³; applying it to May 1949's target of 550 short tons, and breaking it down using the product ratios for the actual month's deliveries, 62 trips would have been needed daily.¹⁶⁴

As detailed in Table 6.10 the Wet Lift fleet comprised 35 aircraft on 1 May 1949. An average of 81 trips were flown daily to deliver 578 short tons.¹⁶⁵ Kinnear proposed 21 Tudors, 24 Lancastrians and 2 Liberators for a long-term civil Wet Lift delivering 562 short tons daily across the year. His figures were superseded by those in the James memo but that lacked detail about utilization.¹⁶⁶ What is unknown are the pinch points in an American Wet Lift and how they would have corrected them.

Contractor	Strength		Aircraft type	Location	Trips/ day/ aircraft in BAFO
	1 May 1949	1 June 1949			
Flight Refuelling	9	9	Lancastrian	Fuhlsbuttel	3.79
BSAA	5	5	Tudor	Wunstorf	3.69
Skyways	4	5	Lancastrian	Wunstorf	3.27
BAAS	2	2	Halifax	Schleswigland	2.84
Airflight	2	0	Tudor	Wunstorf	2.57
LAC	10	10	Halifax	Schleswigland	2.44
Westminster	2	2	Halifax	Schleswigland	1.74
Scottish Airlines	1	2	Liberator	Schleswigland	1.67

Table 6.10: Wet Lift Strength and Performance May 1949

As identified above, there would have been noticeable differences in turn round times between RAF Celle's C-54s and bulk fuel carrying Skymasters. Furthermore, flight

¹⁶² AP3257, p. 244.

¹⁶³ AP3257, p. 575.

¹⁶⁴ AP3257, pp. 65, 199, 216; TNA: AIR 20/2071, Whitfield 9 June 1949; AIR 20/7285, ALREP Pt. IIA for May 1949.

¹⁶⁵ TNA, AIR 20/2071, Whitfield 9 June 1949.

¹⁶⁶ TNA, AIR 20/6893, James 20 April 1949, Appendix A(2) to 6 April 1949 Meeting.

times would have increased if the bulk-fuel specialist airfields at RAF Schleswigland and RAF Wunstorf were retained.¹⁶⁷ RAF Celle's 3.5 trips per assigned aircraft per day would appear overly high but again by how much is uncertain.¹⁶⁸ Nevertheless, at that rate the 62 trips per day 1st ALTF Wet Lift would have involved 18 aircraft. Towards the low end of the performance spectrum would have been Kinnear's summer planning rate of 2 trips daily which would have equated to 31 assigned aircraft.¹⁶⁹ (As Table 6.10 showed, the actual May 1949 Wet Lift daily performance varied between contractors and where the aircraft were located ranging from 3.79 to 1.67 trips 'per aircraft in BAFO'¹⁷⁰).

Accordingly in the peak month of May 1949, a 1st ALTF Wet Lift would have required between 18 and 31 Skymasters making in total between 56 and 69 to replace the whole British airlift. Besides the aircraft in Germany on the front line, the Americans had C-54s at their Great Falls training unit and in the 1,000 hour comprehensive overhaul pipeline that stretched back to bases and contractors in the USA.¹⁷¹ By the end of May 1949, 344 C-54s had been returned there for a 1,000 hour overhaul with peak monthly figures during the Airlift of 60 in April and May 1949.¹⁷² Assuming any increase at the "sharp-end" would have resulted in a proportional increase in the "tails", then in May 1949 the Americans would have needed in total between 87 and 108 Skymasters to replace the British fully and 59 if the Wet Lift was excluded. (Additional aircraft may also have been needed to

¹⁶⁷ AP3257, pp. 338-340.

¹⁶⁸ AFHRA, IRISNUM 241489, CALTF Statistical Summary.

¹⁶⁹ TNA, AIR 20/6893, App. A(2) to 6 April 1949 Meeting.

¹⁷⁰ TNA, AIR 20/2071, Whitfield 9 June 1949 - 'in BAFO' and 'assigned' are not exactly the same owing to different maintenance policies, standards, and resources available in Germany.

¹⁷¹ Tunner planned that in addition to the C-54s engaged on the Airlift a further 25% would be on '1000 hour check in the ZI' - AFHRA, IRISNUM 1038197, Tunner 28 September 1948.

¹⁷² *Berlin Airlift: A USAFE Summary*, p. 96; Roger D. Launius, USAF Historian, 'The Berlin Airlift: Constructive Air Power', *Air Power History* (Lexington VA: Air Force Historical Foundation) Vol. 36, No. 1, Spring 1989, p. 13; Roger G. Miller, 'Freedoms Eagles: the Berlin Airlift, 1948-1949', *Air Power History* (Lexington VA: Air Force Historical Foundation) Vol. 45, No. 3, Fall 1998; Roger G. Miller, 'Global Supply and Maintenance for the Berlin Airlift 1948-1949', *Air Force Journal of Logistics*, Vol. XXII, No. 2, Summer 1998.

convert aircrew from other aircraft types to create and maintain the numbers necessary to support the larger C-54 frontline force).

The extra Skymasters needed on the Northern Zone bases either to replace the British totally or just the RAF and civil dry lift exceeded the spare capacity at RAF Celle and RAF Fassberg. However, as Chapter 5 recorded, it would have been possible to deploy the extra aircraft (38, 56 or 69 depending on scenario) to the eastern flank of the Northern Zone. Several options were available. The conversion of RAF Luneburg (targeted for completion 1 September 1949) into a 60 aircraft Skymaster base and the Fuhlsbittel expansion could have been completed expeditiously. The proposed RAF Celle development could have been started and again speedily finished. Residual Operation PLAINFARE aircraft or permanent BAFO squadrons could have been relocated to permit the Americans to use RAF Wunstorf, RAF Gutersloh or Fuhlsbittel. As 1st ALTF had previously declined these bases, airside and American-specific domestic work services might have been needed first.

Relocation of any residual British transport fleet could have had ramifications. As Chapter 5 indicated Fuhlsbittel aircraft could have moved to RAF Uetersen but only after the pieced steel plank runway had been replaced with a hardened one to withstand the heavy traffic. Relocation to RAF Schleswigland would have substantially increased the hours flown. If the Wet Lift at RAF Wunstorf had moved, its bespoke bulk fuel handling capability would have been lost. As identified above, the long-term Airlift proposals included enhancing Fuhlsbittel and building a Wunstorf-type bulk fuel handling installation there. The airport was relatively near to the north German ports and the northern air corridor. It might have made sense to have expanded the building programme and to have made it the Wet Lift base. The facilities at RAF Wunstorf and RAF Schleswigland could have been retained as contingency for periods of adverse weather.

Cannon/Williams had intended to base all 50 of the RAF's "operationally loaned" C-54s at RAF Lubeck (where RAF Dakotas were presently based).¹⁷³ Williams was either unaware of or chose not to consider that it was two miles from the Eastern Zone and its local circuit operated with the tolerance of the Soviets. His Command

¹⁷³ TNA, AIR 20/6892, Cannon/Williams 14 February 1949.

Air Traffic Control Officer was well aware of the problem saying in a meeting chaired by BAFO's Group Captain Operations that 'The Russians seem to have forgotten about violations in this area but he felt that they would object to heavy aircraft flying up to ten miles into their zone in broad daylight'.¹⁷⁴ It is probable therefore that intensive use of RAF Lubeck by the Americans would not have been possible.¹⁷⁵

Complete replacement of the British would have involved an upper figure of 169 Skymasters operating in the Northern Zone. Assuming they were all around RAF Fassberg and at any one time a few aircraft were not on base, this could have been achieved after the British had vacated RAF Wunstorf (and any associated 'works' completed). Crowding would have continued, however, until civil engineering was finished at RAF Celle and RAF Luneburg. Examination of the airfield capability continues in the next section of this chapter when location of the whole of 1st ALTF (230 aircraft) in the North Zone is considered.

Having examined the requirement and the airfield capacity, available American resources need to be established. The USAAF had received 1,163 Skymasters¹⁷⁶ of which a couple of hundred¹⁷⁷ were passed as R5Ds either directly to the USN or indirectly via those returned by the RAF after the war. (The RAF had received Skymasters under lend-lease and had returned them in 1946¹⁷⁸). The USAAF was

¹⁷⁴ TNA, AIR 55/218, E.123, Meeting HQ BAFO 24 March 1949.

¹⁷⁵ TNA, AIR 55/220, Es:89-90 - in the joint HQ BAFO and HQ TC paper 'The Re-introduction of the Berlin Airlift' 22 December 1949 Baker and Williams recognized the difficulty with using RAF Lubeck for heavy aircraft.

¹⁷⁶ HQ Army Air Forces, Statistical Control Division, Office Of Air Comptroller, *Army Air Forces Statistical Digest 1946 First Annual Number* (Washington DC: US Government, 1947) pp. 95-96, 101.

¹⁷⁷ Joseph F. Baugher, 'USAF Serial Numbers' <www.joebaugher.com/usaf_serials/usafserials.html> [last revised 2012] (1940-1946); Baugher, 'US Coast Guard Aircraft Serial Numbers' <www.joebaugher.com/coastguardseries.html> [last revised 2012] (Third Series); Baugher, 'US Navy and US Marine Corps Aircraft Serial Numbers and Bureau Numbers' <www.joebaugher.com/navy_serials/navyserials.html> [last revised 2012] (Third Bureau Number Series); Jack McKillop, 'Douglas R5D Skymaster' <www.microworks.net/pacific/aviation/r5d_skymaster.htm> [accessed 18 June 2012]; Wixey, pp. 17-19. Wixey recorded 'Over 220 flew' with the USN and US Marine Corps: Baugher listed 213 serials, and McKillop's total by model was 212.

¹⁷⁸ J. Rickard, 'Douglas C-54 Skymaster' <www.historyofwar.org/articles/weapons_douglas_C-54_skymaster.html> [accessed 13 November 2011] records 22 C-54Ds.

the major user with 853 in service.¹⁷⁹ After the Second World War aircraft were allocated to other US Government departments and large numbers disposed of to foreign governments, scheduled and non-scheduled airlines (with some being converted back to civilian DC-4 standards) and air freight carriers.¹⁸⁰ The USAAF holdings had fallen to 489 in December 1946.¹⁸¹ As Tunner recorded: 'C-54s were selling for a song as government surplus.....The C-54s we were going to buy at \$75,000 apiece became worth \$675,000 each when the government needed them for the Berlin Airlift and later the Korean War'¹⁸².

At the start of the Berlin Airlift the USAF had 462 C-54s¹⁸³ The number had fallen to 441 by 31 March 1949 and 435 by 30 September 1949 of which 390 and 353 respectively were categorized as 'first-line active'.¹⁸⁴ The USN inventory had 132 on 1 April 1949 and 129 on 1 October 1949, including its MATS and US Marine Corps squadrons and those listed as awaiting or undergoing overhaul, repair and modification.¹⁸⁵

The 1948 'Blitz Book' contained a summary of American four-engine long range aircraft capacity from August 1948. It included military aircraft and those of American airlines (both scheduled and unscheduled) but not aircraft that may have been operated by other Government departments and agencies. C-54s, C-74s, C-97s and C-69s (probably including the C-121 development as well) and their naval and

¹⁷⁹ HQ Army Air Forces, *Army Air Forces Statistical Digest 1946*, p. 123.

¹⁸⁰ Anon, 'Douglas DC-4 production list' <rjets.net/aircraft> [accessed 28 June 2012]; Wixey, pp. 19-21.

¹⁸¹ HQ Army Air Forces, *Army Air Forces Statistical Digest 1946*, p. 124.

¹⁸² Tunner, pp. 155-156.

¹⁸³ *USAF Statistical Digest 1948*, p. 24.

¹⁸⁴ *USAF Statistical Digest Jan 1949 - Jun 1950*, pp. 171, 175.

¹⁸⁵ Baugher, 'Navy and Marine Corps Aircraft Serial Numbers'; NHHC, 'Department of the Navy, The Naval Aeronautical Organization (Fiscal Year 1948)', Second Revision, (Washington DC: Op-50, January 1947) p. 9a; NHHC, 'Department of the Navy, Naval Aeronautical Organization Fiscal Year 1950' (Washington DC: Aviation Plans Section of DCNO (Air), May 1949) p. 12; NHHC, Office of the Chief Naval Operations, Location of Navy Aircraft, CD Box 3, 1 April 1949 and 1 October 1949 reports; NHHC, Office of the Chief Naval Operations, Location of Navy Aircraft, CD Box 2, 20 June 1948 Location of Navy, Marine and Coast Guard Aircraft report. Coast Guard figures were not included in the 1948 reports but based on a 1 November 1948 Coast Guard report, it had no R5Ds - NHHC, Location of Navy, Marine and Coast Guard Aircraft, CD Box 2, 20 December 1948.

civilian equivalents plus Douglas DC-6s (the DC-4 replacement) were identified. 1,050 aircraft were available. 866 were in the DC-4 family which broke down into: 421 USAF of which 214 were assigned were to MATS; 134 USN, with its MATS contribution of 54; an additional 41 USAF aircraft leased to the airlines, and 270 owned by the scheduled and non-scheduled airlines. 129 C-54s were directly involved in the Berlin Airlift out of 473 members of the DC-4 family 'not considered available in an emergency'. 393 (out of a total of 510 aircraft of all types) were available for an undefined emergency, of which 10% were estimated to be needed for route support. The elapsed time before all 393 could be committed was estimated at 30 days.¹⁸⁶ The Blitz Book estimated that on 1 January 1949 the USAF would have 52 C-54s (including those supporting Strategic Air Command) available in the USA for immediate deployment overseas; 143 overseas and available for employment, and 175 worldwide operating continually, a total of 370. It is noteworthy that whilst C-47s, C-74s, C-82s, C-97s, C-119s, C121s and C124s were cited in these estimates, the Curtiss C-46s were not.¹⁸⁷

On 4 February 1949, Vandenberg was briefed that there were 201 USAF C-54s involved directly with the Airlift as part of 1st ALTF; a further 67 were in 'the pipeline and overhaul pool' with 20 more assigned that day, and 19 were at the Great Falls AFB Airlift training school making a total of 307 from a USAF inventory of 447 with an anticipated monthly attrition of two aircraft. Of the remaining aircraft, eight were in the VIP pool and other untouchables included those supplying the arctic weather stations. Recovering the 40 aircraft leased to the airlines, including seven which were operating on contract to the USAF in support of Operation VITTLES, would have been politically difficult whilst further transfers from the Far East Air Force would be resisted strenuously by the US Army.¹⁸⁸ It is likely that C-

¹⁸⁶ LoC, Vandenberg Papers Container 38, 'Blitz Book' 1948, National Strategic Air Lift Capacity, 11 August 1948 and Combat Readiness Estimated on 1 January 1949; LoC, Vandenberg Papers, Container 59, Symington 10 November 1948, O'Connell 14 October 1948, Anderson 25 October 1948.

¹⁸⁷ LoC, Vandenberg Papers, Container 38, 'Blitz Book' 1948, Combat Readiness Estimated on 1 January 1949.

¹⁸⁸ LoC, Vandenberg Papers, Container 40, Britain folder 2 1949, Smith 4 February 1949; USNA, Record Group 341, HQ U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files 1942 - 1954, NM-15-335A, Box 808, Anderson 27 April 1949, Chief Footnote continues on next page.

54s would also have been required to convert pilots who were new to the type before beginning training at Great Falls.

In April these figures were updated in another submission to Vandenberg. The USAF inventory numbered 441 C-54s. The 1st ALTF numbered 201 C-54s and 24 R5Ds and the Great Falls figure remained at 19. The pipeline and pool had increased to 92 C-54s aircraft, total of 336 aircraft. Of the 89 USAF C-54s not engaged in the Airlift, in support of it, or leased to the airlines, eight were VIP ones; 11 were passenger transports; 12 supported Strategic Air Command and a further two were trainers for that Command's navigators and modified accordingly; four provided transport and air sea rescue in the Aleutians, and eight were assigned to special (and in most cases costly) development projects.¹⁸⁹ Probably only the cargo C-54s of the MATS and Far East Air Force were immediately available, a maximum of 42 aircraft which owing to Skymaster attrition were a wasting asset.

The 13 April 1949 "Anderson attachment" anticipated Operation VITTLES attrition at approximately two per month. Between 1 April and 31 December 1949 this was to be met from Far East Air Force holdings. Thereafter the leased aircraft would be used. However, 33 of them were passenger aircraft that would require modification before being used on the Airlift. Moreover, they were powered by an engine that was not common in the USAF.¹⁹⁰

The April Anderson attachment gave the 'Navy C-54 Inventory' as 132 aircraft¹⁹¹

of Staff Army 1 April 1949. AFHRA, IRISNUM 1038188, 'Summary of the Berlin Airlift' 13 May 1949 listed 18 Skymasters, eight C-47s and one C-82 as wrecked.

¹⁸⁹ USNA, Record Group 341, HQ U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files 1942 - 1954, Germany 381, NM-15-335A, Box 808, attachment to Anderson 13 April 1949; Miller, email CIV USAF AF/HOH, 111820 October 2011 citing other American commitments.

¹⁹⁰ USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, attachment to Anderson 13 April 1949.

¹⁹¹ NHHC, Location of Navy Aircraft, CD Box 3, 1 March 1949 report for R5Ds - USN records on 1 March 1949 listed an inventory of 133 R5Ds including Marine squadrons. 67% were in operational use; one was not flyable and awaiting disposal, and the remainder were awaiting or undergoing overhaul, repair and modification.

including the 24 R5Ds (and members of squadrons VR-6 and VR-8¹⁹²) assigned respectively to 513th and 61st Troop Carrier Groups of 1st ALTF; a further 30 with MATS; eight employed on training (VR-44 was established at seven R5Ds on 1 February); ten on special missions, and 32 in maintenance.¹⁹³ Other sources cited eight R5Ds in an Airlift maintenance and inspection pipeline and a USN MATS squadron (VR-3 established at 15 aircraft) provided trans-Atlantic support and continuation training for aircrew holding prior to reassignment to the two Navy 1st ALTF squadrons. VRs-3 and 44 aircraft were not employed solely on Operation VITTLES.¹⁹⁴ Thus about 67 R5Ds could have been available to reinforce 1st ALTF if the other transport commitments were discarded and time was available to recover those in maintenance and deploy them to Germany.

However, the Americans were operating a worldwide navy and in the late 1940s and early 1950s the USN was fighting very viciously with the other Services for finances.¹⁹⁵ Although conjecture it is most unlikely that aircraft in addition to those in MATS would have been surrendered easily and so only 15 additional R5Ds might

¹⁹² AFHRA: IRISNUMS: 181807-181808, VR-6 Histories October 1948 to December 1949; IRISNUM 1038188, Tunner 12 August 1949 to Cdr Vosseller and Tunner 12 August 1949 to Cdr Badger. Navy squadron VR-8 was listed as having only eight R5Ds in Germany whilst VR-6 had the full 12. The 1 April 1949 corresponding figures were 11 for VR6 and 12 for VR-8 - NHHC, Location of Navy Aircraft, CD Box 3, 1 March and 1 April 1949 reports.

¹⁹³ USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808: attachment to Anderson 13 April 1949, Chief of Staff USAF 9 March 1949.

¹⁹⁴ AFHRA: IRISNUMS: 181802-181803, VR-3 Histories June 1948-June 1949; IRISNUM 180393, Continental Division MATS Historical Report; Anon, 'A special study of Operation "Vittles": the story of the Berlin Airlift', *Aviation Operations Magazine*, Vol. 11, No. 5 (Conover-Mast Publications, April 1949) pp. 118-119; George Locke, 'From the Berlin Airlift to Korea to Vietnam to the Digital Age', *The Aviation Midshipman Log*, Winter 2010 [Magazine of the Flying Midshipman Association, Coronado CA] p. 22; Miller Collection, USNA, Record Group 319, P&O Division Decimal File 1946-48, Chief of Staff USAF 23 July 1948, undercover of Lalor and Ives J.C.S. 1907/4 27 July 1948; Miller, 'Freedoms Eagles', p. 35; NHHC, Department of the Navy, 'The U.S. Navy's Participation in the Berlin Airlift' <www.history.navy.mil/download/berlin-n.htm> [accessed 2 July 2012] records that Marine Transport Squadron 352, with fifteen aircraft, was allotted the Pacific duties of VR-6 and VR-8; NHHC, Location of Navy Aircraft, CD Box 3, 1 February 1949 Report for VR-3 and VR-44, and 1 March 1949 Report for R5Ds generally.

¹⁹⁵ LoC, Vandenberg Papers, Secretary of the air force, Containers: 59, 1948-1950, and 61, 1949-1951; Philip Meilinger, *Hoyt S. Vandenberg*, [Air Force History and Museums Program] (Bloomington IN: Indiana University Press, 2000) pp. 125-159; NHHC, Location of Navy Aircraft, CD Box 3, 1 January 1949 report, Moffat Field.

have been available if VR-3 maintained its current roles. This makes a total for the American military of a further 57 Skymasters immediately available, sourced from MATS and the Far East Air Force, and assuming the latter's objections were overruled.

As shown above between 87 and 108 Skymasters would have been needed to have replaced the complete British airlift and 59 if the substitution had been limited to the RAF and civil dry lift. The "Anderson" military fleet was 573 strong with 366 committed directly or indirectly to the Airlift (including USN VRs 3, 6, 8 and 44 plus the 8 R5Ds in the maintenance pipeline). Assuming the eight USAF VIP transports, the two Strategic Air Command [SAC] trainers, the four in the Aleutians, the eight on development trials and the ten on USN special missions were not reassigned, 175 Skymasters remained for other tasks, to replace the British, and to meet future attrition. Thus it appears that replacement might have been possible numerically in an emergency if there was time to recover leased aircraft; re-role passenger planes to cargo, and to regain assets in maintenance. At short notice, using only the 57 MATS and Far East Air Force aircraft, there would not have been enough.

However, the objective was not to replace the British and meet the Airlift targets for late winter, spring and early summer of 1949 but to achieve the larger future ones and to do so for two to three years.¹⁹⁶ The operational loan of C-54s to the RAF was examined in the preceding chapter. It found that the Americans needed to retain their military inventory to meet their own long-term needs. The introduction to the 4 April 1949 HQ CALTF paper 'Introduction of very heavy transport aircraft into the Berlin Airlift' stated: 'It is understood that the existing fleet of C-54s represents all of that type of aircraft that can be made available for airlift duty' and 'It is understood that there are no more C-54s available to replace losses in the present fleet engaged on the airlift. The present yearly attrition rate is approximately 36.'¹⁹⁷ Turner's

¹⁹⁶ TNA, AIR 20/6891, HQ BAFO AX545 7 January 1949.

¹⁹⁷ TNA, AIR 2/10064, Es:174-178 Tunner undated and HQ CALTF 4 April 1949. USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, Standards Evaluation Branch Planning Research Division 'Long-range Planning for Operation Vittles, An Application of Linear Programming' Study 3 15 March 1949 cited eight aircraft lost on Operation VITTLES through 'wreck' or ground accident but none Footnote continues on next page.

covering letter stated 'there is likely to be a critical period when no further C-54s are available to replace losses'.¹⁹⁸

The Anderson attachment addressed factors affecting the continuation and expansion of Operation VITTLES, including use of very heavy transports [VHTs], citing the civil engineering challenges and numbers to be expected under various possible procurement programmes. It found that the transfer of C-54s to the British was not possible and it recorded that of the 5,620 short tons flown in per day the RAF were hauling 900. Its calculations for a range of growing tonnages assumed without discussion that the British would deliver a 'Clay premise' of 2,003 tons a day. (Probably on the edge of the feasible as a daily average across the year providing the Halifaxes could be kept in the air; the Government accepted the costs for an increased Civil Lift and assembling more Tudors, and the additional personnel were available¹⁹⁹). The Anderson attachment estimated that 434 Skymasters would be needed in 1st ALTF, the USAF pipeline and at the Great Falls training unit to haul 6,682 short tons per day at 65% utilization. For 7,997 short tons the figure grew to 522 and at 9,246 short tons, 731 Skymasters. The detail underlying these figures was not given and the postulated Skymaster tonnages appear on the low side.²⁰⁰ (That problem was not unique to the Pentagon. CALTF's and Cannon/Williams's estimates were also low²⁰¹).

through 'wearouts'. A long-term attrition rate at about two per month was assumed in the Box 808 attachment to Anderson 13 April 1949.

¹⁹⁸ TNA, AIR 2/10064, E.174 Tunner undated.

¹⁹⁹ TNA: AIR 2/10064, Es:54-58 DDASTO's draft note on re-introduction of Operation PLAINFARE August 1949, Minute 156 Rainsford 23 August 1949, Minute 157 Guest 25 August 1949 addressing the RAF lifting 1,000 short tons daily long-term if the Blockade were re-introduced; AIR 20/6893, 6 April 1949 Meeting, item 4, App. A(1) to 6 April 1949 Meeting stated 'it seems reasonably safe to say that the civil lift could be increased to 900 - 1000 tons a day' if the Treasury agreed. The latter felt 'such a large increase....would require a decision by Ministers'.

²⁰⁰ USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, attachment to Anderson 13 April 1949. Tonnages are the assumed American components of the 8,685, 10,000 and 11,249 short ton targets respectively. The latter was Clay's daily average tonnage requirement for FY 1951 and thereafter.

²⁰¹ AFHRA, IRISNUM 1038205, Tunner 8 February 1948 and an undated paper 'The potentials and Requirements of the Airlift'; TNA, AIR 20/6892, Cannon/Williams 14 February 1949. USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - Footnote continues on next page.

The Anderson attachment was USAF orientated and did not address the USN resources in any depth. It applied the proposed 65% utilization pending an Air Materiel Command analysis on whether such a target was viable. It identified that 18,817 additional personnel and civilians had been allocated to USAFE to support Operation VITTLES. It pointed to the resulting loss of efficiency in the other USAF Commands and that more manpower reinforcements would be needed if additional aircraft were committed.²⁰²

Aircrew numbers; Tunner's desire to increase USAF ground crew sizes to the level of the higher performing 1st ALTF USN squadrons (the subject of concern in the USAF and ascribed to the greater numbers of mechanics per aircraft and more senior management per USN squadron²⁰³); employment of cross-trained ex-Luftwaffe mechanics by 1st ALTF squadrons, and resultant increases in the number of aircraft in the Operation VITTLES logistic support force were not addressed in the Anderson Attachment.²⁰⁴

2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, Bagstad 15 March 1949 gave fairly detailed planning parameters but ignored weather. The resultant figures were 11% above the Anderson ones but still below 1st ALTF's achievements in April and May 1949.

²⁰² USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, attachment to Anderson 13 April 1949.

²⁰³ AFHRA: IRISNUM 1038190, Rawlings 27 January 1949, Stiles 28 January 1949, Tunner 10 February 1949; IRISNUM 1038207 Smith in CALTF History March 1949; USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, Tate 3 February 1949.

²⁰⁴ AFHRA: IRISNUM 240605, 'USAFE and the Berlin Airlift 1949: Supply and Operational Aspects', HQ USAFE 1 February 1950, pp. 156-167, 224, 240-243, 320; IRISNUM 241475, 'Command Log HQ CALTF 1 February to 23 May 1946', 12 February 1949; IRISNUM 1006566, 'A Report on the Airlift, Berlin Mission: The Operational and Internal Aspects of the Advance Element', prepared by HQ CALTF, pp. 32-33; IRISNUM 1038207, Smith in CALTF History March 1949; IRISNUM 1038215, 'Preliminary Report to Commanding General USAFE and AOC-in-C BAFO by Commanding General CALTF'; AP3257, pp. 312-313; LoC, Vandenberg Papers, Container 59, Secretary of the Air Force 1948-1950, McKee (for Vandenberg) 16 February 1949; USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808: attachment to Anderson 13 April 1949, McGuire 31 March 1949 stating after 2nd line life was consumed 'usefulness completed', Standards Evaluation Branch, Study 3, 15 March 1949 examined aircrew numbers and the 3 crews per aircraft target and saw difficulties only in 1949 and these Footnote continues on next page.

The paper was concerned that even if the size of 1st ALTF was not increased all C-54s would eventually have to be committed. Attrition would grow sharply in the aging fleet and by November 1952 all would have passed their first line and second line lives. Its conclusion was that an expansion of the Airlift was not viable and its recommendation was that the Joint Chiefs of Staff and Departments of the Army and State were told so.²⁰⁵

Cannon/Williams's 14 February 1949 paper assumed that 120 aircraft would remain in the Southern Zone. They underestimated the tonnage that the present fleet would haul under existing conditions between 1 February and 31 May 1949 by nearly 8%. There are other issues with the paper, for example its assumption that 426 10-ton aircraft could deliver 10,000 short tons daily did not consider the increases necessary in the inspection and maintenance pipeline, the aircrew training fleet, and the air transport element of the logistics tail.²⁰⁶

The Cannon/Williams's paper recognized but excluded from its calculations the overheads of backloading freight from Berlin - essential for civilian morale and employment, and for the city to help pay its way. Cannon/Williams estimated a loss of 40 short tons inbound for every 100 tons back-hauled. Charlesby admitted there were limitations in his backload studies and the answer depended on many factors (such as tonnage loaded at Berlin per aircraft and the reliability of the aircraft type). His tentative findings were a much lower loss of between five to 15.5 tons inbound for every 100 tons backloaded.²⁰⁷

The British backloaded 11,804 short tons between 1 February and 31 May 1949 inclusive, covering returned containers, including the essential coal bags, and

declined over the year, McGuire 8 March 1949, Farthing 1 March 1949, Tate 3 February 1949, Vandenberg 5 January 1949.

²⁰⁵ USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, attachment to Anderson 13 April 1949.

²⁰⁶ TNA, AIR 20/6892, Cannon/Williams 14 February 1949.

²⁰⁷ TNA: AIR 20/6892: Cannon/Williams 14 February 1949; AIR 55/102, Charlesby 21 January 1949 and 14 February 1949.

German mail and economic freight²⁰⁸ whilst the USAF figure in the same period was 21,599 short tons. Using Charlesby's upper figure, that would have meant a loss of 1,830 short tons or an average of 1.5 Skymaster trips per day but using Cannon/Williams 40 percent it would have been four trips or just over one Celle-assigned aircraft.²⁰⁹

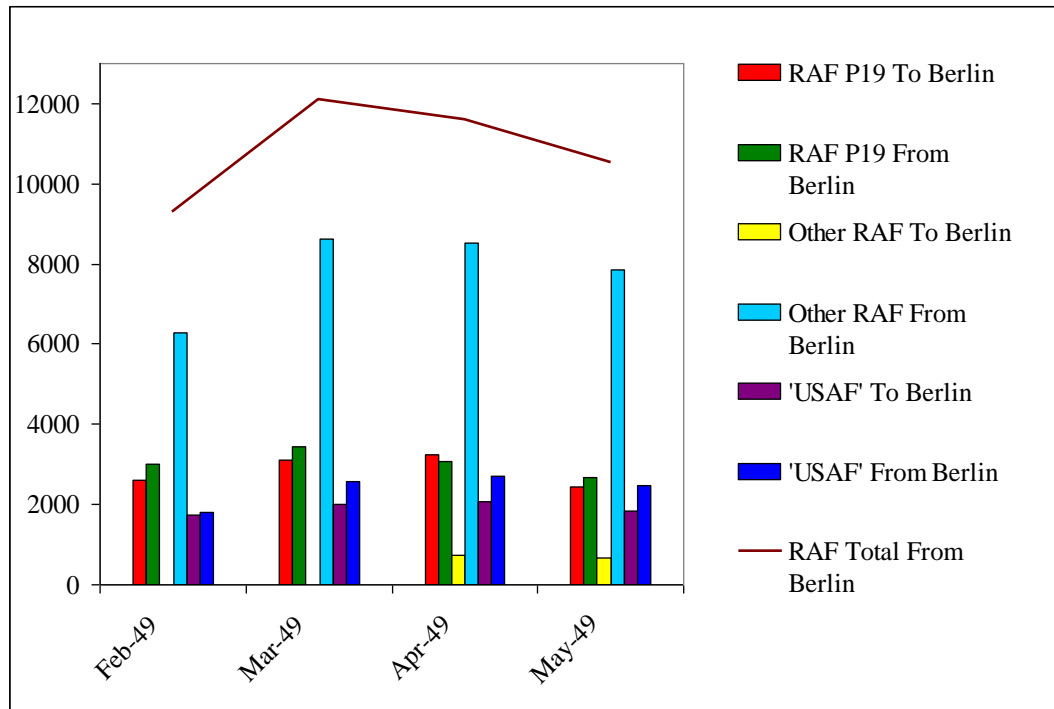


Table 6.11: Passengers Carried, including British Trooping

As Table 6.11 shows, the Royal Air Force majored in the carriage of passengers.²¹⁰ The Table's figures do not include those carried by commercial airlines.²¹¹ Civil contractors were not authorised to carry passengers although George Isaacs, Minister of Labour, flew into Tegel from Fuhlsbuttel on a Flight Refuelling Ltd aircraft on 9 May 1949. Between 1 February and 31 May 1949 the RAF carried 12,784 (63% of the total) passengers into Berlin and 43,491 (82%) out of which the P.19 service

²⁰⁸ Berlin recorded that between midday on 1 February and midday on 12 May 1949 the British flew out 11,991 short tons of freight - TNA: AIR 20/7284, ALREP No. 216 Pt. IV; AIR 20/7285, ALREP No. 316, Pt. IV; T 236/1025, Es:74-74 Burrows 27 August 1948.

²⁰⁹ AP3257, App. R; *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 207.

²¹⁰ AP3257, pp. 525-527.

²¹¹ Percy, *Berlin Airlift*, p. 47; John Provan and R.E.G. Davies, *Berlin Airlift: The Effort and the Aircraft* (McLean VA: Paladwr Press, 1998) p. 44.

transported 11,381 and 12,204 respectively.²¹² These figures included the rotation of two British garrison battalions (totalling a goat, 2,748 passengers and 268 short tons²¹³). Assuming the P.19 service had continued and the British mounted one-off operations for the battalion rotations, the Americans would have inherited nearly 30,000 ex-Berlin passengers, or 250 per day. The Americans scheduled three return trips per day to meet the French and its own passenger requirements²¹⁴ at typically 49 or 50 passengers per flight.²¹⁵

The handling of passengers (including the evacuation of the elderly, sick and children²¹⁶) increased time spent loading and unloading. Estimates exist of inbound freight lost for each planeload of evacuees carried by the Dakota but not for the Skymaster.²¹⁷ The freight capacity of the Dakota was slightly better than a third of the latter and so the inbound cargo lost if an aircraft missed its next block would be less. Moreover, the Dakota could be rerolled to carry passengers in a 'matter of minutes'.²¹⁸ Air travel to and from the City was extremely limited for western Berliners and western Germans unless they were on "official business" or had been sanctioned as evacuees. Bourne and Robertson wanted a long-term Airlift to expand its availability to boost morale.²¹⁹

It is uncertain how 1st ALTF would have approached a task which they considered was less important than hauling freight to the City and which like salt and wet fuel

²¹² AP3257, p. 525.

²¹³ AP3257, p. 526; IWM, Ministry of Defence Post 1945 Official Collection 1945 - 1975, BER 49-155-001; TNA: AIR 24/1807, 28 March 1949; AIR 38/303, E.9 HQ BAFO ADX 511 28 March 1949.

²¹⁴ AP3257, p. 65.

²¹⁵ Air Mobility Command Museum, 'C-54M Skymaster' (Dover AFB DE) <amcmuseum.org/exhibits_and_planes/c-54.php> [accessed 14 September 2012]; Anon, 'C-54 Skymaster', *Airpower Classics* <www.airforce-magazine.com/MagazineArchive/Magazine%20Documents/2006/May%202006/0506classics.pdf> [accessed 14 September 2012].

²¹⁶ AP3257, pp. 303-304; Barker, p. 54.

²¹⁷ TNA, AIR 55/102, Charlesby 21 January 1949. Sunderlands had carried in the region of 40 evacuees who had to be ferried between the shore and the aircraft - interview 26 September 2012 with Stan Harrison, supernumerary aircrew 201 Squadron.

²¹⁸ AP3257, p. 174.

²¹⁹ TNA: AIR 20/6892, Bourne 3 March 1949, Robertson 4 March 1949; FO 1012/561, Es:29-33 Chief Administrative Officer [unsigned] 29 March 1949.

had become a British speciality. Just as it might have been attractive to retain the Wet Lift and a few commercial Halifaxes with panniers to carry salt, would the Americans have pushed for the RAF to continue to carry passengers, probably in a squadron of dedicated 60 seat 'passenger-cum-freight' Yorks?²²⁰ Thus replacing the British involved more than just deploying sufficient additional Skymasters to haul enough freight to Berlin to meet the increasing targets and a long term commitment.²²¹

It is difficult to see how the declining and aging American Skymaster force could have met the targets pending sufficient VHTs becoming available.²²²

Cannon/Williams assumed that would be two years hence whilst Anderson anticipated a total of 78 being delivered to the USAF by November 1950 although there would then have been a lead time before they could have been deployed on intensive operations.²²³ Even if sufficient Boeing C-97As and the Douglas C-124As had become available in time - and had entered service without teething troubles - extensive civil engineering upgrades to the airfields, including the Berlin ones, would have been needed. Assuming the work in Berlin was done sequentially, Lieutenant Colonel M. Falco calculated that it would take three 'construction seasons'; would

²²⁰ RAF Museum, 'Avro York C1', *National Cold War Exhibition* <www.nationalcoldwarexhibition.org/explore/aircraft-information.cfm?aircraft=Avro%20York%20C1&topic=Individual%20Aircraft%20History> [accessed 3 April 2013].

²²¹ TNA: AIR 2/10064, Es:318-319 James 10 March 1949; AIR 20/6891, HQ BAFO AX545 7 January 1949.

²²² TNA, AIR 2/10064, Es:174-186 Tunner undated and HQ CALTF 4 April 1949.

²²³ TNA, AIR 20/6892, Cannon/Williams 14 February 1949; USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, attachment to Anderson 13 April 1949. The USAF VHT inventory was identified in the Department of the Air Force, Operations Statistics Division, *United States Air Force Statistical Digest Fiscal Year 1951 Sixth Edition* (Washington DC: US Government, 1953) Table 86 - 'USAF Aircraft Flight Operations', Table 110 - 'US Military Aircraft Production - FY 1951', Table 113 - 'Summary - Acceptances on Incompleted USAF Contracts', Table 125 - 'USAF Average Active Aircraft'; the Department of the Air Force, Operations Statistics Division, *United States Air Force Statistical Digest Fiscal Year 1952 Seventh Edition* (Washington DC: US Government printing office, 1953) Part II, Table 8 - 'Aircraft and Crews in Combat and Airlift Units', Part V, Table 6 - 'Airplanes by Type. Model and Series Authorized for USAF Procurement - Fiscal Years 1950, 1951, 1952', and *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 100 - 'Status and Line Classification of USAF Aircraft'. However, the different circumstances and priorities pertaining after the Berlin Blockade ended in May 1949 and the Korean War started in June 1950 prevent correlation between the actual deliveries and what might have occurred if the Berlin Airlift had continued as was anticipated.

require 2,500 short tons of plant and 84,000 tons of asphalt to have been flown in, and the paving blocks from 240 miles of Berlin streets to have been lifted and crushed.²²⁴

HQ CALTF had reservations about the C-97 being able to cope with the approaches to Tempelhof pointing to their understanding that its flying characteristics were similar to the Boeing B-29A which was considered 'unsafe' to 'operate into that airfield'. Tunner advocated that the civil engineering upgrades should be concentrated initially on three bases, RAF Luneburg (Northern Zone), Rhein-Main AFB (Southern Zone) and Tegel in Berlin. Thus, if the task was undertaken in parallel and with vigour, it should have taken one construction season and if approved in 1949, should have been completed before the winter of 1950-1951. In the case of Tegel, it would have necessitated airlifting nearly 31,000 tons of plant and asphalt or a tonnage nearly equivalent to the total carried by the RAF in May 1949 - at 35,749 tons, its best month.²²⁵

Writing to Williams in January 1949, Merer expected the Douglas DC-6A (successor to the DC-4) to replace the Skymasters as its all-up weight was less than the VHTs, although at 15 tons its payload to Berlin was less than the 25 tons HQ CALTF anticipated for the C-124. The rationale for its use was that the runways, taxi ways and hard standings would not have needed as much upgrading. Tunner also recommended it because of its proven reliability commercially whereas the VHTs

²²⁴ TNA, AIR 2/10064, Es:174-186 Tunner undated and HQ CALTF 4 April 1949 with attachments; USNA, RG341, NM-15-335A, Box 808, attachment to Anderson 13 April 1949.

²²⁵ AP3257, p. 519; TNA, AIR 2/10064, Es:174-186 Tunner undated and HQ CALTF 4 April 1949 with attachments. A YC-97 was trialled on the Airlift between 1 May 1949 and 24 May 1949 and exposed a number of problems. Finally, it closed a runway at RAF Gatow for 7 hours after making an emergency landing during which four tyres burst and it remained there until awaiting replacement engines until mid-June 1949 - Miller, *To Save a City* (Texas A&M) p. 197.

were untried.²²⁶ However, whilst the Douglas DC-6A was in production, the USAF version, the C-118A, was not yet on order.²²⁷

The primary reason for the efficiency of the American airlift lay in it being a military operation using a single aircraft type, the Skymaster, which whilst designed as a passenger liner was fortuitously a robust heavy load carrier. Could the Americans have replaced the British with contractors or multiple military aircraft types? The degradation that would have arisen from such a move is uncertain and so the next part of this section is necessarily at a high level.²²⁸

The 11 August 1948 appraisal of the American National Strategic Air Lift Capacity identified 478 four-engine aircraft flying with American scheduled and non-scheduled airlines of which 41 were leased from the USAF. There were 311 in the DC-4 family of which 151 were deemed unavailable in emergency.²²⁹ American airlines had flown C-54s under contract for the US Government during World War II and at least one operated under a trooping contract post-war.²³⁰

American Overseas Airlines was the scheduled carrier into Tempelhof - as BEA was to RAF Gatow; Seaboard and Western made about 100 flights into under contract to American Overseas Airlines, and Transocean Air Line delivered control approach radar. PAN AM appears to have flown in unofficially. Operation VITTLES was supported by a logistic tail that stretched back to contractors and military depots in

²²⁶ TNA: AIR 2/10064, Es:174-186 Tunner undated and HQ CALTF 4 April 1949 with attachments; AIR 55/218, Es:185-188 Merer 13 January 1949.

²²⁷ Baugher's 'USAF Serial Numbers' (1949-1951) and his 'US Navy and US Marine Corps Aircraft Serial Numbers and Bureau Numbers' (Third Bureau Number Series) reveal aircraft serial numbers being allocated to the C-118 and the USN equivalent R6D; NHHC, Office of the Chief Naval Operations, Location of Navy Aircraft, CD Box 4; Department of the Air Force, Operations Statistics Division, *United States Air Force Statistical Digest Fiscal Year 1953 Eighth Edition* (Washington DC: US Government printing office, 1954) Part V, Table 104, 'US Military Airplane Production'. The caveat in footnote 223 above about different circumstances and priorities again applies.

²²⁸ Crackel, p. 60.

²²⁹ LoC, Vandenberg Papers, Container 38, 'Blitz Book' 1948, National Strategic Air Lift Capacity, 11 August 1948.

²³⁰ Camille Allaz, John Skilbeck, ed., in English George Grant, *History of Air Cargo and Airmail from the 18th Century* (London: Christopher Foyle in assoc. with the International Air Cargo Association, 2004) pp. 160-161, 176; Wixey, pp. 19-20.

the USA. Between 30 June and 31 December 1948 this tail included a civil trans-Atlantic auxiliary lift involving six airlines making 274 trips and Crackel records that overall Pan American, American Overseas Airlines; TWA, Seaboard and Western, Alaska Airlines, Transocean Air Line, and Trans-Caribbean Air Cargo flew 610 transatlantic 'missions'.²³¹

Whilst the American contractors' experience did not match the intensity of Operation VITTLES, the US Government, its military and its contractors had experience working together. 'Contracts for airlift augmentation during the Berlin crisis involved 110 civilian aircraft from some 25 different companies'.²³² It probably came as no surprise to the USAF that friction arose during the Blockade between the USAF and some commercial enterprises including claims that contracts were awarded for personal gain, possible commercial sharp practice or military naivety, and an argument that would continue for most of the Cold War that all MATS operations should be undertaken by the airlines.²³³

Wixey identified countries beyond the USA which would become members of NATO or which were members of the "Old Commonwealth" that used the DC-4 and the Skymaster and James mentioned the possible purchase of four from Sweden. However, aside from the information about the Netherlands, sources are not sufficiently accurate to explore either an international DC-4 civil airlift or the

²³¹ AFHRA, IRISNUM 240839, WARX 68537 2 September 1948; TNA, AIR 20/6892, 4 February 1949; Anon, 'A Special Study of Operation "Vittles"', pp. 115, 118-119; Crackel, pp. 60-61; Paul Fisher, 'The Berlin Airlift', *The Bee-Hive*, Vol. XXIII, No.4, Fall 1948 (East Hartford United Aircraft Corporation) [IRISNUM 471465] p. 28; Miller, *To Save a City* (Texas A&M) pp. 75-77, 93; Provan and Davies, pp. 44-45; *Berlin Airlift: A USAFE Summary*, pp. 21, 116; Wixey, pp. 19-20.

²³² Thomas E. Eichhorst, Lt Col USAF, 'Military Airlift: Turbulence, Evolution, and Promise for the Future', (Airpower Research Institute Air University, Research Fellow, 1991) p. 22, citing David Wragg, *Airlift: A History of Military Air Transport* (Novato Ca: Presido Press, 1986).

²³³ AFHRA, 1038193, Tunner 6 September 1948; Eichhorst, Chaps. 1 and 2; Michael Fricano, Lt Col, 'The Evolution of Airlift Doctrine and Organization' (Air War College Air University, 1996) Chaps. 5 and 6; LoC, Vandenberg Papers: Container 59, Symington 15 Dec 1948, Lambert 22 November 1948, Norden 11 October 1948; Container 60, Symington 4 January 1950, Kuter 9 December 1949, Kuter 29 November 1949. The [US] Civil Reserve Air Fleet was not created until 1952 and it was not used until Operation DESERT SHIELD on 17 August 1990 - Fricano, p. 36; Crackel, Chap. IV 'Shaping the Civil Reserve Air Fleet, 1952-1954'.

potential for buying back DC-4s.²³⁴

Type	Number at 31 December 1948	Number at 30 September 1949
C-46	687 (At 31 March 1949, 198 categorized active second line and 389 inactive second line)	321 (of which 85 categorized active second line and 236 inactive second line)
C-74	12	12
C-82	204	195
C-97	9	11
C-121	2	10 with the majority being used on the trans-Atlantic shuttle.

Table 6.12: Potential Airlift Cargo Aircraft (besides C-47s and C-54s)

Table 6.12 shows the five other cargo aircraft that the USAF had besides its C-47s, which had withdrawn from the Airlift, and its C-54s.²³⁵ The USAF deployed its C-74 VHTs and seven Lockheed C-121 Constellations (primarily a four-engine passenger transport²³⁶) on trans-Atlantic support alongside transiting Operation VITTLES Skymasters; civilian contractors, and the USN squadron VR-3. From 4 October 1948 the C-74s ran a regular shuttle rising to three round trips per week and a monthly peak of 14 trips in January and 16 in February 1949.²³⁷ This essential commitment reduced further the ability of the US military to replace the British with other aircraft types.

A Douglas C-74 had been used to haul construction equipment in August and September 1948 and a Boeing C-97 was trialled on the Airlift in May-June 1949 but

²³⁴ TNA, AIR 20/6893, James 20 April 1949; Wixey, pp. 20-21.

²³⁵ *USAF Statistical Digest 1948*, p. 30; *USAF Statistical Digest Jan 1949 - Jun 1950*, p. 175.

²³⁶ The National Museum of the USAF, 'Lockheed EC-121D Constellation', *Fact Sheets* (Wright-Patterson AFB OH) <www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=328> [accessed 16 December 2012].

²³⁷ Anon, 'Airlift Over, MATS Resumes World-Wide Schedules' *All Hands*, No. 394, December 1949; Anon, 'A Special Study of Operation "Vittles"', p. 22; J. G. Barlow, 'The US Navy's Participation in the Berlin Airlift', (Naval Historical Centre DC) <www.history.navy.mil/branches/org4-10.htm> [accessed 20 July 2012]; *Berlin Airlift: A USAFE Summary*, pp. 76, 79, 116; Fisher, 'The Berlin Airlift', p. 28; Miller, *To Save a City* (Texas A&M) p. 112.

both had weight and performance implications and continuous use of either (or the Douglas C-124 development) required major civil engineering work in Germany.²³⁸

Five C-82s were deployed to Wiesbaden AFB to handle abnormal indivisible loads.²³⁹ Between 1 January and 31 July 1949 they achieved slightly less than five short tons per trip but could be loaded in half the time taken for a C-54.²⁴⁰

It is conjecture how the Americans would have controlled traffic without a British presence but, as outlined in Chapter 5, aircraft cruising speeds were an important consideration when controlling movement in the corridors when traffic was mixed. A fleet of C-82s would have introduced similar problems to those of the Bristol Freighter (another specialist abnormal load carrier), the Sunderland and the Dakota. They were slower than the four-engine transports.²⁴¹ The RAF continued to use the Dakota throughout Operation PLAINFARE for want of anything better²⁴² and the departures of the flying boats and the Freighter from the Airlift fleets were not solely due to speed²⁴³. In the case of the Sunderland, moreover, it was despite of its 'psychological significance'.²⁴⁴ With a maximum freight capability of 5 tons, the C-

²³⁸ *Berlin Airlift: A USAFE Summary*, pp. 20, 72, 103, 114; TNA, AIR 2/10064, Es:174-186 Tunner undated and HQ CALTF 4 April 1949 with attachments; USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, attachment to Anderson 13 April 1949.

²³⁹ *Berlin Airlift: A USAFE Summary*, p. 11; *USAF Statistical Digest Jan 1949 - Jun 1950*, Table 207.

²⁴⁰ *Berlin Airlift: A USAFE Summary*, p. 114. Their replacement the Fairchild C-119B would have carried eight tons but HQ CALTF recommended that it be used solely to replace the C-82s employed to haul awkward loads - TNA, AIR 2/10064, E.178 part of HQ CALTF 4 April 1949.

²⁴¹ AP3257, p. 195, App. H; The National Museum of the USAF, 'Fairchild C-82 Packet', *Fact Sheets* (Wright-Patterson AFB OH) <www.nationalmuseum.af.mil/factsheets/> [accessed 10 July 2012]; TNA, AIR 2/10063, Es:51-52 Appendix to Cannon/Williams 22 December 1948.

²⁴² TNA: AIR 2/10063, Es:51-52; AIR 20/6893, DCAS meeting 29 March 1949.

²⁴³ AP3257, pp. 14, 195, 243; TNA, AIR 2/10063, Es:21-26 Meeting 18 January 1949.

²⁴⁴ TNA, AIR 20/6891, Walmsley 13 January 1949. The USN did not deploy its faster, larger Martin JRM-1 Mars flying boat transports - Anon, 'Airlift Over, MATS Resumes World-Wide Schedules', *All Hands*, No. 394, December 1949; William Green, *War Planes of the Second World War: Flying Boats* (London: Macdonald, 1962) pp. 184-5; NHH, 'Department of the Navy, The Naval Aeronautical Organization (Fiscal Year 1948)' p. 9a; NHH 'Department of the Navy, Naval Aeronautical Organization Fiscal Year 1949', Footnote continues on next page.

82 could best be viewed as a substitute for the RAF Dakota in a general purpose carrier role.

The USN inventory held 31 R5Cs (C-46s).²⁴⁵ When arguing against withdrawal of more C-54s from the Far East Air Force, General Omar Bradley (Chief of Staff Army²⁴⁶) stated that whilst 13 C-46s were being withdrawn from storage to recover more would require '9,500 man hours per plane'.²⁴⁷ Williams claimed that a C-46 could carry about seven tons on short trips which might have applied in the Operation PLAINFARE environment. That assessment is supported by Buffalo Airways which uses two C-46s in the North West Territories of Canada but not by The National Museum of the USAF which cited five tons.²⁴⁸ Henry, writing about Imphal, gave its cargo ceiling as 11,000lbs.²⁴⁹ Either way, this was more than the Dakota although less than the Hastings or York.

Williams had discovered that the Americans had several hundred surplus C-46s and assumed that conversion from Dakotas would be simple.²⁵⁰ Tedder raised the C-46

Second Revision (Washington DC: Aviation Plans Section of DCNO (Air), June 1948) p. 12; NHHC, Location of Navy Aircraft, CD Box 3, 1 February 1949 report.

²⁴⁵ NHHC, Location of Navy Aircraft, CD Box 3, 1 February 1949 report.

²⁴⁶ US Army, Historical Resources Branch, 'United States Army Chiefs of Staff' <www.history.army.mil/faq/FAQ-CSA.htm> [accessed 3 November 2012].

²⁴⁷ USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, Chief of Staff Army 1 April 1949.

²⁴⁸ Anon, 'Commercial Aircraft of the World', *Flight*, 23 November 1961, p. 811; Buffalo Airways's website says: 'We are proud to have the Commandos working with us. Our two C-46s can haul up to 14000lbs of bulky freight into short, unprepared strips that are so commonly found in the NWT. Travelling at 190 mph...' <www.buffaloairways.com/index.php> [accessed 28 July 2012]; The National Museum of the USAF, 'Curtiss C-46', 'Curtiss C-46D', and 'Curtiss C-46D Commando', *Fact Sheets* (Wright-Patterson AFB OH) <www.nationalmuseum.af.mil/factsheets/....> [accessed 10 July 2012]; TNA, AIR 20/6892, AX559 28 January 1949. LoC, Vandenberg Papers, Container 38, 'Blitz Book', 'Characteristics of USAF Aircraft' gave the C-54G cargo capacity as 33,000lbs whilst the Air Mobility Command Museum, 'C-54M Skymaster' (Dover AFB DE) <www.amcmuseum.org/exhibits_and_planes/c-54.php> [accessed 4 August 2012] cites a maximum load of 28,000lbs. To avoid excessive wear it was flown at 20,000lbs during the Airlift and undoubtedly the same would have had to happen with the twin-engine C-46.

²⁴⁹ TNA, CAB 44/215, M. Henry, 'Siege of Imphal: War History' [1955(?)], p. 102.

²⁵⁰ TNA, AIR 20/7148, AX559 28 January 1949. Although the Americans operated the C-46 in the Northwest Europe and Indo-Burma theatres alongside the British, none were delivered to the RAF.

possibility with Cannon and was informed that there were no large numbers available and those that did exist were 'old and dilapidated'. Furthermore, as DCAS explained, the RAF wanted to concentrate on obtaining C-54s on loan and did not wish their efforts diverted by 'any proposal for the loan of other aircraft'.²⁵¹ Tunner wanted a single type deployed in 1st ALTF and was no fan of the C-46. He wrote in his autobiography in the section covering his joining the Airlift: 'No more C-46s. We were going to fly the best....the C-54'.²⁵² Whilst this all militates against the C-46, it saw service in Korea and remained in USAF service until the late 1960s. Seventy four C-46s were categorised as active first line on the 30 September 1950 and as the Korean War continued the number increased to 300 on 30 June 1951.²⁵³

If the C-46 had been used as part of the replacement fleet for the British, high serviceability under intensive operations would have been critical. The following quotation shows that quality may have been missing:

But from first to last, the Commando remained a headache. It could be kept flying only at the cost of thousands of extra man-hours for maintenance and modification. Although Curtiss-Wright reported the accumulation by November 1943 of the astounding total of 721 required changes in production models, the plane continued to be what maintenance crews around the world aptly described as a "plumber's nightmare." among the ATC pilots the Commando was known, with good reason, as the "flying coffin" ATC had elected by March 1946 to retain in service 402 C-47's as against only five C-46's. While AAF storage fields filled up with C-46's retired from government service and rejected by the civil airlines, the demand for all available C-47's continued brisk.²⁵⁴

Table 6.13 analyzes the Northern Zone performance in May 1949. It uses BAFO sources to minimize differences in terminology and measurement and re-emphasizes earlier findings. It shows why the military wished to replace the Dakota and why the

²⁵¹ TNA, AIR 20/7148, AM MSX850 4 February 1949 from DCAS (for quotation).

²⁵² Tunner, pp. 165 (for quotation), 197.

²⁵³ Department of the Air Force, Operations Statistics Division, *United States Air Force Statistical Digest Fiscal Year 1951 Sixth Edition* (Washington DC: US Government, 1953) Table 119; The National Museum of the USAF, 'Curtiss C-46' to 'Curtiss XC-46L' and 'Curtiss C-46D Commando', *Fact Sheets*, (Wright-Patterson AFB OH, accessed 10 July 2012).

²⁵⁴ John D. Carter, 'Chapter 1 The Air Transport Command', in *Army Air Forces in World War II, Volume VII: Services Around the World: 1. Air Transport*, ed. by Wesley Frank Craven and James Lea Cate (Chicago: University of Chicago Press, 1958) pp. 25-26.

Civil Lift was becoming crucial to the overall British contribution.²⁵⁵ Cannon and Williams acknowledged that the British needed better performing aircraft operating at higher utilization and CALTF's fleets needed to be built up to the system's saturation point.²⁵⁶ What they did not record, if they even considered it jointly, was replacing the British completely. Given the long-term perspective of the Airlift; the 1,440 deliveries per day saturation point; the ever growing targets reaching to 10,000 short tons in 1950²⁵⁷, and the likely C-46 Airlift performance, at best it could have served as a temporary expedient to replace the smaller Dakota until a better performing aircraft became available.

	Short Tons per Day	Trips per Day	Daily Average Strength	Daily Trips per Aircraft on Strength	Tons per day per Aircraft on Strength
<u>RAF:</u>					
York	700	81	38.8	2.1	18.0
Dakota	217	58	45.5	1.3	4.8
Hastings	236	25	13.6	1.8	17.4
<u>Total</u>	<u>1153</u>				
<u>Civil Fleet</u>	736 ²⁵⁸	100	34.3	2.9	21.5
<u>American Northern Zone</u>	3,026	307	87.1	3.5	34.7

Table 6.13: Analysis of British Performance May 1949

To conclude, the Americans could not have replaced the British even just the RAF and the civil dry lift with a military Skymaster force especially given the expectation of a two to three year Airlift, growing targets, increasing attrition as the fleet aged, uncertainty about the VHT procurement programmes, and the associated civil

²⁵⁵ AFHRA, IRISNUM 241489, CALTF Statistical Summary; *AP3257*, pp. 519-521, 526-7, 529; TNA, AIR 55/110, Form STATS 120 May 1949.

²⁵⁶ TNA, AIR 20/6892, Cannon/Williams 14 February 1949.

²⁵⁷ TNA, AIR 2/10064, Es:318-319 James 10 March 1949.

²⁵⁸ Civil dry lift 158, and Civil Wet Lift 578.

engineering upgrades. They might have done so if it was imperative with a mixed military and civil airlift, using a variety of aircraft of American manufacture and providing sufficient aircrews and maintenance personnel were found. Funds, resources and time would have been needed to recover aircraft from storage, airline use and in some cases, to change from a specialized role.²⁵⁹ Such a force would have inevitably introduced inefficiencies and whether it could have achieved the projected 1950 daily target of 10,000 short tons has to be questioned.

RELOCATING 1ST AIRLIFT TASK FORCE

In September 1948 HQs BAOR, BAFO and Hanover District explored the implications of having 250 four-engine aircraft based on expanded airfields in the Northern Zone with the remaining aircraft (such as Dakotas) either held in reserve in the Southern Zone or operating from other airfields in the north.²⁶⁰ Tunner recorded that the weather had been better in the north over the last 50 years²⁶¹ although concerns about the different weather patterns in northern and southern Germany were tendered as the reason for not relocating 1st ALTF in total²⁶². He believed that two aircraft based at RAF Fassberg would equate to three at Rhein-Main or Wiesbaden AFBs.²⁶³ However, he only compared flight times not the multiple components of a round trip or the challenges of generating serviceable aircraft.²⁶⁴ The Cannon/Williams's 22 December 1948 'Appreciation on Operations VITTLES and PLAINFARE' recorded that C-54s based at RAF Fassberg carried approximately 50% more than those from the Frankfurt-on-Main area, potentially 1,339 short tons per day.²⁶⁵ DDASTO had a different motive when observing in January 1949 that

²⁵⁹ TNA, AIR 55/98, E.67 part of draft for *Air Clues*.

²⁶⁰ TNA, AIR 20/7804, Es:15-17, Dugmore 22 September 1948 - assumed aircraft distribution: RAF Fassberg 100, RAF Wunstorf 70, RAF Lubeck 40 and RAF Celle 40.

²⁶¹ Tunner, p. 186.

²⁶² AP3257, p. 143.

²⁶³ Tunner, p. 170.

²⁶⁴ AP3257, pp. 291-293, 381-387.

²⁶⁵ *Berlin Airlift: A USAFE Summary*, p. 15 shows that a 50% increase on its December's figures for all aircraft on both Southern Zone bases would have been 978 short tons; TNA: AIR 2/10063, Es:45-52 Cannon/Williams 22 December 1948, Es:129-130 Air Staff BAFO 6 November 1948 estimated for December 1948 that each Northern Zone C-54 would carry 10.5 short tons more per day; AIR 20/6892 Cannon/Williams 14 Feb 1949.

more US aircraft hauling cargo in the Northern Zone could 'release a few of our hard pressed squadrons for training and re-equipment'.²⁶⁶ This section explores whether relocation of 1st ALTF to the Northern Zone would have made the British airlift unnecessary.

Relocation from south to north would have caused temporary disruption resulting in a drop in tonnage which as Chapter 4 and earlier in Chapter 6 identified would have been disastrous during the winter months. Thus late spring and early summer would have been a far safer time to make a change and so that is the period studied. It is also appropriate to remember that whilst there was a groundswell of opinion to move all of 1st ALTF to the Northern Zone, in their February 1949 paper Cannon and Williams concluded that 120 Skymasters should be retained in the Southern Zone and only the excess deployed in the north.²⁶⁷ Nevertheless, the scenario examined in this research assumed that the complete Skymaster fleet was located in the Northern Zone.

The first consideration was whether there was adequate spare capacity on the Northern Zone airfields. The available berths in April and May 1949 had not changed from those for February in Table 5.11 above. 1st ALTF's establishment of 225 Skymasters and five C-82s was well documented but identifying the actual aircraft strength on each base was not easy. Contemporary statistics recorded monthly averages for April and May 1949.²⁶⁸ The difficulty lay with having to use averages over a period; they do not show the peaks involved, for example ten aircraft on one day and zero for nine produces the same ten day average as one aircraft daily for ten days.

The AP3257 'Report by Civil Airlift Division' identified the maximum number of aircraft on contract as 47 in May 1949.²⁶⁹ Again the actual number on the airfields

²⁶⁶ TNA, AIR 2/10063, E.41 DAASTO 10 January 1949.

²⁶⁷ TNA, AIR 20/6892, Canon/Williams 14 February 1949.

²⁶⁸ AP3257, p. 284; NHHHC, Location of Navy Aircraft, CD Box 3, 1 June 1949; TNA, AIR 55/110, Forms STATS 120; *United States Air Force Statistical Digest Jan 1949 - Jun 1950* Table 207.

²⁶⁹ AP3257, p. 243 excluded those undergoing certification of airworthiness and 'write-offs'; TNA, AIR 20/2071, Civil Airlift Monthly Report No. 5 - May 1949, Whitfield 9 June 1949 for aircraft undergoing C of A and write-off details.

was presented as a monthly average. In both the American and the Civil Airlift cases figures for aircraft off-base for servicing and repair could therefore be ignored. The RAF statistics recorded its aircraft strengths on the airfields in Germany as averages over periods of a fortnight and a month. This overcame the issue of aircraft rotation but again did not indicate a theoretical maximum or identify the peak. The figures changed over time and reflected the slow build up of the Hastings fleet. The Dakotas based at RAF Buckeburg (which was not an Airlift airfield) for P.19 duties were routinely included in the statistics. Excluding these, the British fleets in Germany during May 1949 averaged 130 aircraft (in rounded numbers) comprising: 17 Halifaxes, 14 Hastings, 11 Lancastrians, 2 Liberators, 6 Tudors, 40 RAF and civilian Yorks and circa 40 RAF Dakotas.²⁷⁰

Primary sources show how the American aircraft were divided between the Northern and Southern Zones.²⁷¹ The RAF operated only one type per airfield although at RAF Schleswigland and RAF Wunstorf they did so alongside contractors.²⁷² The Civil Airlift Lancastrians and Halifaxes each operated concurrently from two airfields. Whitfield's reports provided monthly averages for each civilian type and base.²⁷³ Distribution could therefore be established.²⁷⁴ Airfield capacity in the Northern Zone in May 1949 was unchanged from that in Table 5.11. RAF Luneburg was slowly being developed, expansion at Fuhlsbuttel had started and enhancements had been postulated for RAF Celle.²⁷⁵ Table 6.14 summarizes the position.

²⁷⁰ AP3257, pp. 243, 252, 537-539; TNA: AIR 55/110, Forms STATS 120; AIR 20/2071, Civil Airlift Monthly Reports.

²⁷¹ NHHC, Location of Navy Aircraft, CD Box 3 and particularly 1 June 1949; *United States Air Force Statistical Digest Jan 1949 - Jun 1950* Table 207 and May 1949 particularly.

²⁷² AP3257, pp. 17, 152.

²⁷³ AP3257, pp. 286; TNA, AIR 20/2071, Civil Airlift Monthly Reports and No. 5 - May 1949 particularly.

²⁷⁴ AP3257, pp. 522-523.

²⁷⁵ AP3257, pp. 16, 232-233, 268, 323-327; TNA, AIR 20/6892, Cannon/Williams 14 February, Williams 26 February 1949, Meeting 18 January 1949 [reflects order in file].

<u>Airfield</u>	<u>Capacity May 1949</u>	<u>Maximum Capacity after expansion</u> ²⁷⁶
<u>Northern Zone Airfields operating American Aircraft</u>		
RAF Celle	100	54
RAF Fassberg		66
<u>British Airfields operating British Aircraft</u>		
Fuhlsbittel	18	60
RAF Lubeck	54 Dakotas	50 C-54s
RAF Luneburg		60
RAF Schleswigland	notionally 40	60
RAF Wunstorf	50	60
<u>British Total</u>	162	290
Northern Zone Total	262	410
RAF Fassberg "Clutch" Total	150	240

Table 6.14: Northern Zone Airfield Capacity

The capacity of Northern Zone Airlift airfields was 262 aircraft rising to 410 after expansion at RAF Celle and Fuhlsbittel, completion of RAF Luneburg and assuming RAF Wunstorf was full to capacity. CALTF's theoretical requirement was around 360 aircraft, 230 of which were American Skymasters and C-82s. Thus, until the civil engineering was complete, there was insufficient space for all the Airlift aircraft. The possible Soviet reaction to four-engine aircraft operating from RAF Lubeck was mentioned above and it would appear not to have been an option. The objective would surely have been to maximize capacity on the eastern flank of the Northern Zone and to avoid growth at RAF Schleswigland. In addition it is likely that the Americans would have wished to "clutch" their aircraft around RAF Fassberg. Once RAF Luneburg was completed, RAF Celle expanded, and provided the British vacated RAF Wunstorf this could have been achieved within a 73km

²⁷⁶ Where several figures for airfield capacity were recorded in the primary sources, for example when expansion was under discussion, the largest are used.

radius but as Table 6.14 shows, the airfields would have been close to full, even allowing for not all aircraft being on base at one time. Besides maintenance, other considerations which might have prevented filling airfields to capacity could have included American unwillingness to share airfields with British aircraft; to accept "substandard" domestic accommodation, or to reorganize the 1st ALTF groups.

Thus the 1st ALTF aircraft in the Southern Zone could have been repositioned in the north but it would have had to be done in phases as capacity became available. It would also have been wise to start building a further Skymaster airfield at the edge of the clutch in case crowding had to be eased. Placing all the American aircraft in one small area of Germany²⁷⁷ would have resulted in periods when operations there would have been impossible owing to bad weather. Moreover, when conditions deteriorated aircraft in transit would have had to be diverted in relatively large numbers. Diversion airfields would have continued to be needed.²⁷⁸ The positive aspect was that American relocation to the north east and possible British rearrangement could have offered the opportunity to improve the traffic flows in the corridors and in the Berlin Air Safety Zone. Gains here, however, would have been offset by the distances to Berlin if greater use of RAF Schleswigland had been necessary.²⁷⁹

²⁷⁷ Buckeburg, Celle, Fassberg, Gutersloh, Luneburg, Wunstorf lie within a 110 kilometre radius of Hanover.

²⁷⁸ *AP3257*, pp. 143 160, 297.

²⁷⁹ *AP3257*, pp. 20-23, 150, 156-157, 284, 291-293, 335-341.

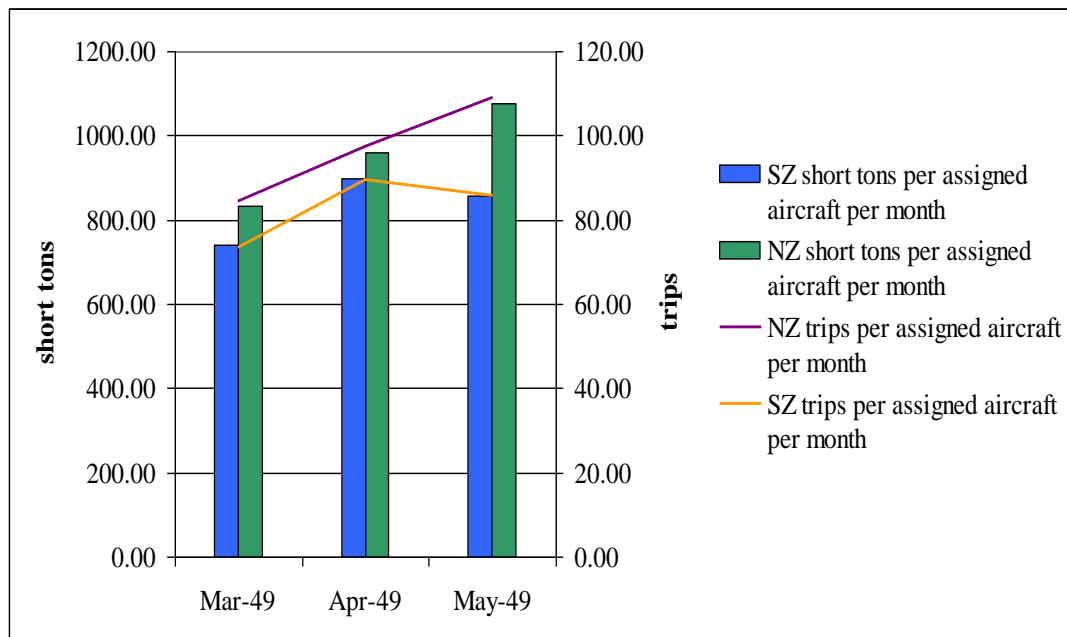


Table 6.15: Comparison of Skymasters in Northern and Southern Zones

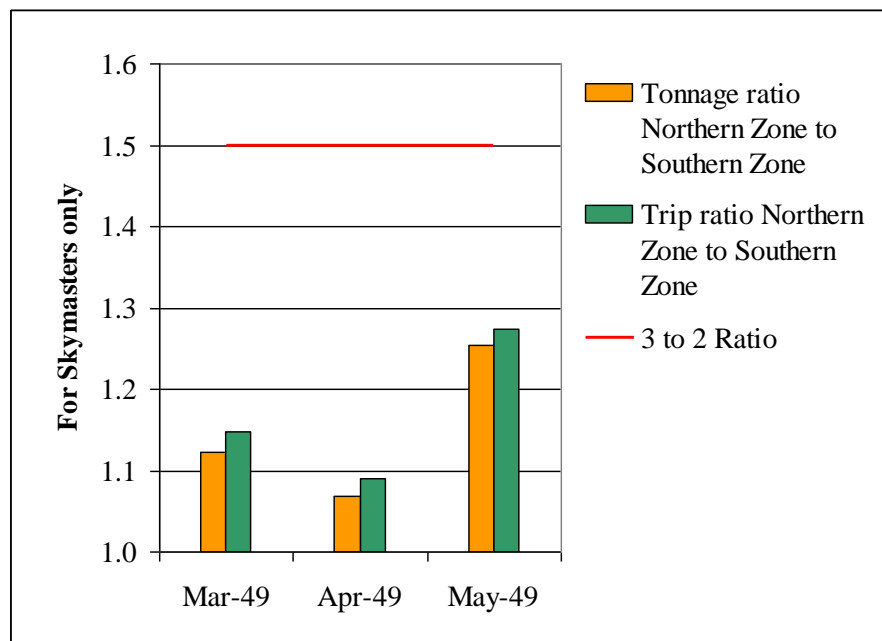


Table 6.16: Ratio of Northern to Southern Zone Tonnage and Trips

Tables 6.15 and 6.16 show that during March, April and May 1949 the Northern Zone assigned Skymasters did not achieve the extra trips over the Southern Zone ones that the two Cannon/Williams papers anticipated. The April 1949 figures may have been skewed by 'Easter Parade' when CALTF delivered 12,941 short tons in 24

hours during a specially orchestrated event.²⁸⁰ May 1949 was the best month with performances continuing to rise and RAF Fassberg at last coming very close to RAF Celle in both tonnage and trips per assigned aircraft. Had all the Southern Zone Skymasters been repositioned in the North and had they matched the rates achieved by the American aircraft already based there, the daily average tonnage increase that month would have been about 800 short tons, not the anticipated 1,339.²⁸¹ The May 1949 daily average for the British was 1,889 short tons of which 578 were hauled by the Wet Lift. Locating all of 1st ALTF's Skymasters in the Northern Zone would not have produced enough extra tonnage to permit the total withdrawal of the British or even just the RAF and civilian dry lift component at 1,311 short tons.²⁸² Thus it would have been necessary to have kept some of the British aircraft in Germany.

Repositioning the British Aircraft in the South

A contemporaneous suggestion by Charlesby was to transfer the British aircraft to airfields in the Southern Zone concurrently with the relocation of the whole American task force to the North. This would have been a temporary measure whilst airfield capacity in the Northern Zone was expanded.²⁸³ This part of the "Relocation" section identifies what would have been involved in implementing such a proposal. Although there may have been command and domestic problems repositioning the British in the Southern Zone, just as there was for the USAF at RAF Fassberg, the airborne aspects alone are considered.

Besides being a major Airlift base, Rhein-Main AFB was the hub for American transatlantic air traffic (including C-74 VHTs) and it served as a neo-depot for intra-theatre C-54 spare parts and assemblies. These functions would either have had to be relocated to the Northern Zone with adverse impact there on airfield capacity and the

²⁸⁰ Miller, *To Save a City* (Texas A&M) pp. 173-175; Tunner, p. 221-222. AP3257, pp. 148, 552 concurred.

²⁸¹ AFHRA, IRISNUM 241489, CALTF Statistical Summary.

TNA, AIR55/110, E.12 1 May-31 May 1949 Form STATS 120 did not differentiate between aircraft types used by 1st ALTF. It thus produced different figures but showed the same trend.

²⁸² AP3257, pp. 519, 521.

²⁸³ TNA, AIR 55/98, Es:38-46, Report 143 15 October 1948; also see TNA, Air 20/7804, Es:32-33 App. A to Waite 9 September 1948 to GOC British Troops Berlin.

inadequate technical and domestic accommodation or retained in the Southern Zone with the resultant inefficiencies being accepted by the Americans and the British.²⁸⁴

Table 5.11 showed the potential capacity of the American airfields in the Southern Zone was 119 aircraft and that 126 Airlift aircraft were based there prior to 1 August 1949. The latter figure was four aircraft less than the average for the British fleets in Germany during May 1949. In 1948 Tunner had suggested Giebelstadt as an additional base in the Southern Zone that had 'suitable runways and parking area' but needed to be 'completely manned'.²⁸⁵ Airfield capacity would have added to the case for the Wet Lift remaining in the Northern Zone where the necessary bulk fuel handling capabilities and expertise were and where the corridors were better positioned to handle flights to the two specialist terminals at RAF Gatow and Tegel.

Tempelhof was the third and most south-easterly Airlift airfield in the Berlin Control Zone.²⁸⁶ It lay in the American Sector and was normally dedicated to traffic from the Southern Zone.²⁸⁷ Relocation would have meant either revising flight paths in the congested control zone²⁸⁸ to maintain Tempelhof as an American destination or redistributing the consignee bases. British aircraft used the Gee network and Eureka beacons linked to Rebecca radar sets for navigation, and BABS for airfield approach.²⁸⁹ This equipment would have had to be installed in the Southern Zone.

The southern corridor routed over the Harz Mountains which peaked at 3,743 feet.²⁹⁰ Vertical separation in the northern corridor ranged from 1,000 to 5,000 feet whilst the southern one's minimum altitude was 4,500.²⁹¹ Climbing to this extra height increased engine wear, lengthened flight times, and created difficulties controlling

²⁸⁴ Anon, 'A special study of Operation "Vittles"', pp. 10-11, 118-119; *Berlin Airlift: A USAFE Summary*, pp. 76, 79, 81.

²⁸⁵ AFHRA, IRISNUM 1038197, Tunner 28 September 1948.

²⁸⁶ AP3257, pp. 21, 29, 150.

²⁸⁷ AP3257, pp. 291-292; *Berlin Airlift: A USAFE Summary*, p. 32; Tunner, p. 170.

²⁸⁸ AP3257, p. 292.

²⁸⁹ AP3257, pp. 28-29, 39, 46, 161, 165, 167, 169-173.

²⁹⁰ Harz National Park, <www.thisisharz.com/index.html> [accessed 5 August 2011]; Tunner, p. 168.

²⁹¹ AP3257, pp. 23-25.

descents in the Berlin Air Safety Zone²⁹². Flying higher increased the risk of icing and the Americans had de-icing issues.²⁹³ The RAF considered its de-icing equipment had insufficient capacity as it lasted only an hour which would have been a third of the Berlin round trip from the Southern Zone.²⁹⁴ Some civil aircraft lacked the equipment completely.²⁹⁵ The Halifaxes lacked proper wing de-icing and its absence was one of the reasons that the Bristol Freighters were withdrawn.²⁹⁶ More sorties would have been lost during the winter in the south owing to ice and there would have probably been more aircraft crashes.

As Table 5.9 showed, the round trip between Rhein-Main and Berlin was 200 nautical miles longer, over an hour more in flying time, than from RAF Wunstorf. The higher operating altitudes and the longer distances would have consumed more fuel which could have meant that less payload was available for cargo. On the positive side, because the southern corridor would have been dedicated to British aircraft, the RAF could have determined the rules for traffic movement. It might have replaced the block system by the efficient continuous flow one and introduced two-way traffic, thus reducing the round trip by 60 nautical miles.

It is plausible to assume that had the British retained responsibility for the Wet Lift, it would have continued to have been based in the Northern Zone. Operating from bases in the American Zone would have incurred extra costs and especially dollar expenditure which might have terminated the civilian dry lift and a similar case could be made for not repositioning the inefficient Dakotas. Thus just the RAF Hastings and Yorks might have been involved.

Whilst Charlesby's reasons for the RAF's performance²⁹⁷ revealed that flight times were a minor consideration in the number of trips mounted daily, the current research has found no baseline from which to calculate the impact on tonnage that

²⁹² AP3257, pp. 288-289, 293.

²⁹³ AP3257, p. 160, 224-225, 294-295 (including ground de-icing measures).

²⁹⁴ AP3257, p. 160.

²⁹⁵ AP3257, pp. 15, 294.

²⁹⁶ AP3257, pp. 195, 224.

²⁹⁷ See thesis Chap. 5.

repositioning the RAF Hastings and York aircraft in the Southern Zone would have caused. Charlesby's proposal was for a temporary repositioning. The Airlift was expected to continue into US FY1951, with a theoretical saturation ceiling of 1,440 deliveries per day²⁹⁸ and Clay's the long-term average daily target of 11,249 short tons²⁹⁹. It would, thus, have been sensible to retain all the British assets; to do so from airfields in the Northern (British) Zone alongside the whole 1st ALTF Skymaster fleet, and to accept the civil engineering involved in expanding existing Airlift bases, developing additional ones, and retaining and provisioning the ones in the Southern Zone to provide diversion airfields during inclement weather.

CONCLUSION

The British aircraft were not superfluous. They generated less sorties per aircraft than the Americans and aside from the dry lift Tudors, the multiplicity of aircraft types hauled less per trip than the Skymaster. Once it was stabilized the Civil Lift's overall utilization was better than the RAF. With the objective of a long-term expanding Airlift, the military Skymaster fleet was insufficient to replace the British. Additional aircraft would have needed more personnel in air and ground roles and the Americans, unlike the British, were already recalling reservists and employing German mechanics to retain their high manpower to aircraft ratios. The US civil air fleet, particularly the DC-4 and DC-6 elements, would have increased aircraft numbers and provided aircrews and mechanics but was unlikely to have performed as well as 1st ALTF. The only other military freighters available in large numbers and not requiring runway upgrades were the C-46 and C-82. They might have offered an improvement on the Dakota until something better was available but they were not the vehicles by which 1st ALTF could have been expanded to allow it to replace the British or even the British dry lift.

Relocating all of 1st ALTF into the Northern Zone would have increased the tonnage but by less than was anticipated by its contemporaneous advocates and not by enough to have replaced the British or even just the RAF and the dry lift component

²⁹⁸ Tunner, p. 174.

²⁹⁹ USNA, Record Group 341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, attachment to Anderson 13 April 1949.

of the Civil Lift. There was insufficient space on Airlift bases in the north and the permutations available to overcome this would have involved civil engineering development. Repositioning of BAFO squadrons or residual Operation PLAINFARE aircraft might, moreover, have been necessary to maintain the priority accorded to the Skymaster throughout the Airlift.

A further consideration was the niche tasks that the British airlifts had acquired during the Blockade. How significant these were would have depended on when the Americans replaced the British. The Civil Lift became the sole bulk carrier of liquid fuels - the Wet Lift. The dry lift Halifaxes' removable panniers made them the ideal vehicle to haul salt. The impact of both cargoes on the Americans would have extended beyond just hauling extra tonnage. It seems likely that providing the Civil Lift had reached the stage of performing adequately, it would have been asked to continue to haul these hazardous cargoes. The RAF had also found a specialist role, the carriage of passengers from Berlin. The Skymasters could have easily taken over the task and the number of aircraft involved would have been small. However, to have done so would have affected adversely the Americans' prized turn round times; diverted attention from the supreme objective - as they perceived it - of delivering the maximum tonnage to Berlin, and because the task included evacuating the elderly, sick and children, complicated ground processing. Again it might have been attractive to the Americans if the British retained this task.

Thus, with growing targets and a perceived long-term commitment, it would not have been sensible to withdraw the British assets, no matter how inefficient some were, until the Airlift reached its saturation point. Britain's aircraft were needed for logistical reasons.

Chapter 6 reinforced and extended the points identified in Chapter 5 about British performance and utilization. It emphasized the implications of the British having to fly further than the C-54s based at RAF Celle and RAF Fassberg and the disadvantages imposed on them by traffic control in the air corridors. It revealed the advantages of being able to haul standardized loads and that the Americans proportionally hauled more homogeneous cargoes. Eighty percent of their cargoes were sacks of coal which were relatively easier to man-handle and to stow onboard whereas the equivalent British figure was 30%. Unlike the 1st ALTF, which was

operating a single type, the British were operating seven as the Blockade was being lifted with a number of variations even within a particular aircraft type. Thus even when homogeneous possibilities existed, assembling of loads had to be undertaken with greater skill by the British, with attention being paid to the characteristics of individual aircraft. This may have had some impact on utilization but nowhere near sufficient to explain why a C-54 based in the Northern Zone completed 3.6 round trips per day whilst a RAF Yorks did 1.2.³⁰⁰ The Civil Lift was an expensive and inefficient way to increase the tonnage hauled. Multiple small companies, often operating with inadequate capital, were involved. There were shortages of personnel, spares and ground equipment. As the Wet Lift showed, selecting individual companies on the basis of lowest price rather than the effectiveness of the contractor and its aircraft added to problems faced by the Airlift's managers and its freight handlers, even to the extent of there not being a standard coupling to connect aircraft to the discharge standpipes in Berlin. Chapters 2 to 6 inclusive also served as sources for the comparison between the application of logistics in the Airlift with earlier hot wars which is covered in Appendix 7.

³⁰⁰ Figures are after application of Charlesby smoothing exercise, see Appendix 3.

CHAPTER 7:

CONCLUSIONS

'The Anglo American airlift was one of the wonders of the world.'

Clement Attlee, March 1949.¹

This chapter brings together the main findings of the research into the Anglo-American Berlin Airlift - and particularly the British component - presented in the course of the thesis. It recalls how the key factors for a successful airlift identified in precedents from Second World War were implemented during the Airlift before proceeding to reveal the thesis's findings in response to the four research questions set in Chapter 1 above. By way of a coda, it also offers the findings of a subsidiary, but closely related exercise, considering how the application of logistics by the participants in the Airlift differed fundamentally from hot wars logistics. The chapter ends by identifying the key areas in the historiography of the Airlift that have been augmented by the thesis and proposes areas for future research.

The June 1948 to May 1949 Blockade of Berlin was a pivotal moment in East-West relations.² The motivation for it was the Soviet desire to prevent or at least delay developments that would lead to the Federal Republic of Germany. As Chapter 2 showed, a blockade was made possible because Berlin was situated 100 miles inside the post-war Soviet Zone of occupation. Thus in June 1948, rather than submit to Soviet terms whatever these might be, the three Western powers (and, to a large extent, this meant the USA as the dominant element in the partnership) opted to supply western Berlin by an airbridge using the three air corridors over the Soviet Zone agreed by the Four Powers in 1945.

An airborne blockade would have required the interception of aircraft flying along legally acknowledged routes and thus the probability of open war in the event of

¹ Anon, 'Berlin Airlift Inspected by Mr. Attlee', *The Kalgoorlie Miner*, 7 March 1949, p. 5.

² The lifting of the Blockade on 12 May 1949 did not signal guarantee of access. Interference with surface traffic continued and the western Berlin railway workers' strike necessitated the Airlift continuing into autumn 1949 when the City's stockpiles reached the levels considered adequate to match any renewed blockade by the Soviets.

such escalation of the crisis. However, this would appear to be a risk that the Soviet leadership were unwilling to take. The Soviet leadership's wartime experiences of the siege of Leningrad and the German defeat at Stalingrad were probably a major reason why they may have expected an airbridge would fail of its own accord, even without having to take the provocative step of intercepting Western aircraft. Nor were the Soviets alone in misreading the precedents. Senior Anglo-American politicians and officials initially saw the Airlift as a temporary expedient not a viable longer-term solution, a holding measure whilst diplomatic negotiations led to a speedy resolution.

Although in the event the airlift sceptics' expectations were confounded, as shown in Chapter 4 it was not until 15 March 1949, by when it was clear that the Airlift was sustaining western Berlin, that the negotiations started that led to the lifting of the Blockade. Whether their scepticism would have been justified if the Blockade had continued is another matter. Certainly, as the thesis also showed, there are grounds for thinking that the Anglo-American plans for an ever-larger Airlift continuing at least into 1951, may have been overly optimistic.

The studies of World War II airlifts in Chapter 3 of the thesis identified five key factors necessary for a successful airlift: first, the ability to produce sufficient aircraft daily and to keep them flying under all weather conditions; this in turn necessitated adequate all-weather airfields at both ends of the airbridge, adequately equipped and linked to safe and efficient management of traffic; third, there needed to be efficient, and therefore effective, handling of the huge quantities of freight involved; fourth, the ability to protect the aircraft and the airfields involved from enemy attack and finally, an effective airlift command structure.

During the Airlift, as Chapters 5 and 6 found, over time the Americans progressively became capable of generating large numbers of sorties daily although the British were less successful. Airfields were built, renovated and enhanced; systems and training programmes were developed and technology was deployed which permitted large numbers of sorties to be flown night and day in almost all weathers. Fundamentally the freight hauled daily by the Americans and the British was dictated by the number of aircraft sorties mounted. But without competent handling of the

cargoes on the ground, figures in excess of 8,000 short tons would not have been achieved.

Stalingrad and Leningrad were examples of airbridges that had been interfered with successfully by the enemy's air and ground forces. The Berlin Airlift was harassed by the Soviets on occasion but it is unlikely that this was centrally orchestrated and certainly no aircraft were lost as a result. We are therefore confronted with the question why the Soviets exercised this restraint. The traditional view, the one expressed above, is that the Soviets were unwilling to risk all-out war. However, as the thesis has demonstrated in Chapter 5, the Soviets had other options that would have disrupted the Airlift to such an extent that it might have failed. They could, for instance, have undertaken major jamming of ground-to-air voice communications. That the Soviets refrained from doing this reinforces the perception that they expected the Airlift to fail from the sheer scale of the logistical task. But this still leaves the puzzle as to why such measures were not deployed by the Soviets in March and April 1949 to show capability whilst the lifting of the Blockade was being negotiated. The muted, and generally open-confrontation-avoiding Soviet reactions to the Airlift thus remain puzzling.

Another striking feature of 1948-1949 identified in the thesis were the lessons about command and control evident in the airlifts of the recent past that were not implemented in the Berlin Airlift. Chapter 3 identified the need for simple, clear-cut arrangements - factors that in many regards were absent during the Airlift. The Americans appointed their successful Hump commander, Major General William Tunner, to command 1st ALTF. Likewise, the British Army utilized prior experience by appointing Brigadier J. A. Dawson - who had commanded the Combined Army Air Transport Organization in Burma - as Commander Army Air Transport Organization [CAATO]. The RAF, on the other hand, deployed one of its Transport Command Group commanders - Air Commodore John Merer - whose prior experience was limited to nine months commanding routine, low-intensity, peacetime air transport.

It was not only the failure to utilize experience that was the problem. The thesis shows that command arrangements were dysfunctional. Both the American and the British Airlift task forces were divorced from their normal functionally-organized

command structures and emphatically placed under the two local geographic commanders - the Commanding General United States Air Forces in Europe [CG USAFE] and the Air Officer Commanding in Chief British Air Forces of Occupation (Germany) [AOC-in-C BAFO] - whose headquarters were insufficiently experienced in transport operations. Although a Combined Airlift Task Force Headquarters [HQ CALTF] was created under Tunner it was not truly a joint headquarters. The American element also commanded 1st ALTF and because of an overall shortage of available British officers, there were few RAF officers on its staff. HQ CALTF's relationship with Air Commodore John Merer's headquarters, Headquarters Number 46 Group [HQ No. 46 Gp.] was best described as one of traffic coordination.

Finally, the thesis has shown a further complication adding to the problems of command and control. The RAF was not the only British air fleet involved in the Berlin Airlift. There was also the 'Civil Lift', a collection of civilian contractors with each providing a small number of aircraft that were hired by the Foreign Office and were managed in Germany - often with difficulty - by the local British European Airways manager. He cooperated closely with the RAF but was not under its command. Moreover, the administrative arrangements in Britain were of Byzantine complexity with five ministries being involved: the Air Ministry, the Foreign Office, the Ministry of Civil Aviation, the Ministry of Supply and the Treasury. In summary, then, there were deficiencies in the command and control arrangements for this multinational operation but even if they had been perfect, it is difficult to see how an American commander could have improved significantly the shortcomings of the British air fleets.

The core of the thesis - Chapters 5 and 6 - examined a wide variety of evidence to determine how, in practice, the Airlift functioned overall and to assess the contribution of the British component in particular. Assessing the extent of the nation's contribution meant that the fundamental question of the utility of its involvement was considered: was the participation of British aircraft really essential to the Airlift's overall success? To answer this, four closely related subsidiary questions have been addressed. First, were there reasons beyond considerations of aircraft size and numbers that account for the differences in performance between the Americans and the British? Second, were British aircraft needed logistically? Third,

did the Americans have the additional resources needed to replace the British and fourthly, was it a feasible or realistic option for the Americans to have replaced the British by locating all of their 1st Airlift Task Force [1st ALTF] in the Northern Zone?

These research questions sit within the 'cinderella' subject of air logistics and the historical application of airpower. A unique hybrid methodology has been developed from those of the historical researcher and the logistician which has been used to answer the questions set out above. The thesis is the first time the Berlin Airlift has been analysed in this way; indeed following extensive research it may be concluded that this is the first time a historian has proved empirically that the participation of British aircraft throughout the whole Anglo-American operation was logistically necessary.

Turning to the first of these questions, did factors in addition to aircraft size and numbers account for the differences in performance between the Americans and the British, the thesis found that in 1949 the average strength in Germany for the RAF was 39 four-engine Avro Yorks; 14 four-engine Handley Page Hastings and 51 twin-engine Douglas Dakotas. The Dakota was necessary because the RAF had no other option and even with the Dakota deployed, the RAF could not achieve the tonnages that its political masters aspired to. Contractors had to be hired. By May 1949 the Civil Lift had been refined to five different four-engine aircraft types with the average monthly strength being 47 aircraft operated by 11 companies. The American force, on the other hand, was entirely military and comprised 225 four-engine Douglas Skymasters and five end-loading Fairchild C-82s to handle the abnormal indivisible loads.

The small capacity of the Dakotas was not lost on the Americans who had withdrawn their equivalent C-47s from the Airlift at the end of September 1948. In January 1949 USAFE suggested to BAFO that the RAF should operate Skymasters and the Dakotas be withdrawn. An operational loan for the duration of the Airlift had obvious appeal to the British but it soon became clear that American resources were stretched and no Skymasters would be forthcoming. That the RAF continued to make attempts to acquire them thereafter suggests much about the state of the Service's inventory and its sensitivity about its low performance.

Table 7.1 below summarizes statistics recorded at the time about the tonnages carried by the different types of aircraft.³ They are, however, indicative because of the different maintenance policies and ways of accounting for aircraft status across the three fleets. Using Dr Arthur Charlesby's - the Chief Research Officer at HQ BAFO - calculations to attain a common baseline, we find, for example, that theoretically it took almost three and a half RAF Yorks to haul the same tonnage daily as an American C-54 based in the Northern Zone. Table 7.1 and the York example cited display clearly that the RAF's (and to a lesser extent the Civil Lift's) inability to deliver American sized tonnages was not due solely to aircraft numbers and sizes; it also arose from lower aircraft utilization.

<u>Aircraft Type</u>	<u>Short Tons per aircraft at base per day</u>	<u>Round Trips per aircraft at base per day</u>
BRITISH		
CIVIL LIFT		
Halifax	13.9	2.1
Lancastrian	20.8	3
Liberator	12.1	1.7
Tudor	25.4	3
York	25.7	2.7
RAF		
Dakota	4.4	1.3
Hastings	13.2	1.5
York	15.8	1.9
AMERICAN		
C-54 at RAF Celle	32	3.3
C-54 at RAF Fassberg	30.3	3.1
Skymaster at Rhein-Main AFB	28.5	2.8
C-54 at Wiesbaden AFB	22.6	2.3

Table 7.1: Average Daily Tonnage Carried during March, April, May 1949

³ See Table 5.4 and Table 5.5 in Chapter 5.

The low utilization in the RAF task force arose from several reasons: an insufficiency of manpower - both aircrews to fly the aircraft and technical staff to service them; the poor serviceability of its aircraft, and the priority accorded to the 1st ALTF Skymasters by the Anglo-American commanders both in airfield allocation and traffic management. Poor utilization was not peculiar to BAFO; it affected the RAF as a whole. Unfortunately, whilst this may have been tolerated in a small, under-funded, under-equipped peacetime Air Force, it was not appropriate to hauling the maximum tonnage possible in accordance with the CALTF constitution.⁴

Diminishing numbers of personnel available to fly and to service its aircraft was a problem confronting the RAF in the period immediately after the Second World War. Several influences had led to this end: the political commitment to maintain the discharge dates of the conscript airmen which meant that during the Airlift expertise was leaching away; the Government's decision not to recall reservists in quantity - unlike the Americans who employed them extensively - and the poor pay and conditions of service which reduced the likelihood of persuading suitable ex-servicemen to rejoin. Aircrew were transferred from ground tours and other RAF Commands but the Service could not bring together the personnel required for an operation as intensive as the Airlift. Supplementation from the Royal Australian Air Force, Royal New Zealand Air Force and South African Air Force palliated, but did not solve, the problem. Moreover, their assistance provided aircrew for the Dakota pool not the large aircraft. Royal Canadian Air Force aircraft (variants of the Skymaster) and personnel were sought on several occasions but these requests were refused by the Canadian Government.

Compounding the problem of lack of aircrew was that of keeping such aircraft as the RAF had in a state fit for flying. RAF aircraft were over-inspected and over-serviced. Aircraft were grounded for rectification when minor faults were found. In addition there was a high rate of aircraft unserviceability awaiting the delivery of spare parts. The pooling of Transport Command squadrons in Germany; the application of the newly conceived three-wing organization; the retention of 100-

⁴ 'to deliver to Berlin, in a safe and efficient manner, the maximum tonnage possible consistent with combined resources of equipment and personnel available' - TNA, AIR 25/1266, No. 46 Gp. ORB, Appendices September-October 1948, Appendix 20 to Form 540 dated 15 October 1948.

hour inspections at the parent stations in the United Kingdom, and an insufficiency of experienced maintenance tradesmen all contributed to the problem of poor serviceability rates. Moreover, unlike the Americans who used ex-Luftwaffe personnel extensively as mechanics, the British only employed locally engaged civilians for non-skilled tasks. Thus, it is not surprising that after the Airlift HQ BAFO recorded that the RAF needed more reliable aircraft; that its maintenance policies required revision, and that there had been insufficient aircrews and maintenance staff.

The aircraft-routing and traffic procedures imposed by HQ CALTF also impeded the British contribution - both military and civilian - to the Airlift. The procedures rightly gave the more numerous and most effective and robust aircraft, the American Skymaster, preference and although revised several times during the Airlift, they continued to disadvantage the British. Moreover, in bad weather when fewer flights could be handled, the RAF Dakotas would be grounded to maximise the number of deliveries by the larger aircraft. British aircraft - both military and civilian - were also affected adversely by the decisions about where aircraft were based in Germany. Positioning USAF C-54s in the Northern Zone at RAF Celle and RAF Fassberg benefited the Airlift overall but it meant that British aircraft had to fly further to Berlin, an hour more per round trip in the case of the Hastings.

Because, for the reasons we have seen, the RAF was unable to deliver the tonnage that the Government considered appropriate to the national effort, the Foreign Office chartered aircraft from numerous small firms - the Civil Lift. This was an expensive way to increase the British tonnage as was shown in Chapter 2 above. The form of contract used, moreover, was defective; there was no motivation for the firms to increase their aircraft's payloads. Selecting individual companies based on the lowest price meant that some firms' performances left much to be desired. Many companies operated on a shoestring and were given no inducement to invest beyond the minimum essential to retain their contract. Here too, there were shortages of personnel, spares, and ground equipment, and there were extremely few backup aircraft. Furthermore, because of the variety of aircraft types employed and the many small firms operating them, there were differences even at the level of

individual aircraft about what could be carried and how it could be loaded and unloaded which compromised the efficiency of the cargo handling on the ground.

Thus the difference in tonnages hauled by the Americans and by the British was not due solely to the former having more and larger aircraft as Dudley Barker wrote in 1949.⁵ Lower rates of utilization also played a part and these arose from several reasons some of which were due to Britain's difficulties in finding the resources needed to deliver the tonnages that the Government considered appropriate in a country that was still recovering from the Second World War and whose priorities did not include retaining a large air force.

If the British contribution to the Airlift was compromised as we have just seen, what was its contribution to the operation overall? Was it necessary in logistical terms - or, to put the question in a different way, would the Airlift have failed if British aircraft had not been involved? Resolution of this, the second of the research questions, was addressed in Chapter 6 and involved comparison of the targets set with the tonnages carried by the American and British air fleets. During the Blockade, the American, British and French military governors jointly set several mandatory targets for the Airlift as well as some additional higher "desirable" ones. In each instance the tonnage hauled exceeded the mandatory target, although, and subject to questions about statistical precision, the winter figures showed a margin equivalent to just half a day's deliveries by the combined air fleets. The desirable targets, however, were not met.

Of course, comparison of the tonnages actually delivered with the targets that the military governors set is not the sole yardstick by which the logistical need for British aircraft should be judged. Even with the Anglo-American airbridge, conditions for the western Berliners during the Blockade were austere and at no time during the Airlift was the theoretical saturation point of 1,440 deliveries per day reached. Furthermore, it was not just the actual Airlift targets that need to be considered but the larger ones thought to be necessary for the long-term airbridge being planned for 1950 and 1951 which were dependant on the British delivering

⁵ Dudley Barker, *Berlin Airlift: An account of the British Contribution* (London: HMSO, 1949) p. 6.

2,003 short tons a day.⁶ Thus, as the thesis showed, the conclusion has to be that British aircraft were needed logistically.

Given the scale of the British contribution, the question naturally occurred to contemporaries as to whether it might have been replaced entirely by the Americans allocating men and materiel from their own resources. This - the third research question - arose from contemporary British fears - reinforced by a statement made by Major General Tunner (Commanding General CALTF) - that growing US strength would eventually make the RAF and the Civil Lift redundant.⁷ Was this American boastfulness, or did the Americans have sufficient resources actually to effect this?

The thesis assumed any additional American aircraft needed in Germany to replace the British would be based in the Northern Zone close to RAF Fassberg - from which C-54s already operated. Two scenarios were considered: first, replacement of the RAF and the dry lift element of the Civil Lift and second, the RAF and the complete Civil Lift including the aircraft engaged in delivering liquid fuel in bulk - the Wet Lift. The latter was an important niche activity but in terms of the total Airlift tonnage it was small - 7% of the total daily tonnage in May 1949. Moreover, hauling liquid fuel in bulk introduced issues which the US 1st ALTF did not face with its dry cargoes.⁸ Faced with these challenges the Americans might have preferred not to replace a British Wet Lift which, as recorded in Chapter 1, was a possibility that the British had appreciated in November 1948.

The analysis recorded in Chapter 6 revealed that to have replaced all the British aircraft in May 1949 would have required in the order of 73 extra Skymasters to be based on the Northern Zone airfields whilst 42 would have been needed if the Wet Lift element was excluded. In addition to these aircraft the Americans would have needed to augment both the Skymasters being used for Airlift training in the USA and in their 1,000 hour comprehensive overhaul pipeline. Assuming increases at the

⁶ A greater amount than the combined British fleets averaged even in the last weeks of the Blockade.

⁷ AFHRA, IRISNUM 1038197, 'History of the Airlift Task Force (Prov.): September 1948', Tunner 28 September 1948.

⁸ For example: the need to modify aircraft; the dangers arising from carrying hazardous cargo and the use of purpose-built fuel installations located at specific airfields.

"sharp-end" were proportionally reflected in the "tails", in May 1949 the Americans would have needed in total 115 Skymasters to replace the British fully and 66 if the Wet Lift was excluded.

Having established the number of aircraft necessary to replace the British, two considerations arise: was there sufficient spare capacity on the airfields and did the American military have sufficient additional Skymasters? Chapter 6 showed that to have accommodated the extra aircraft on the airfields around RAF Fassberg would have required civil engineering enhancements. In spring 1949 only the conversion of RAF Luneburg to handle 60 Skymasters was under way and it was not planned for completion until 1 September 1949. To answer the second consideration, the thesis revealed that both the USAF Director Plans and Operations and HQ CALTF doubted that the US military would not have enough Skymasters to meet its commitments under the long-term Airlift plans.⁹ Moreover, the USAF assessment of Airlift future capability had assumed that the British would deliver the 2,003 tons per day mentioned above. Thus the thesis has shown that we have to conclude that the US military Skymaster force alone could not have replaced the British and met the long-term Airlift commitments.

The American planners also considered the practicability of using very heavy transport aircraft for the long-term Airlift. Even if sufficient had become available in time, very substantial civil engineering upgrades would have been needed at the involved airfields - for example Tegel in Berlin would have needed 31,000 tons of plant and asphalt to be flown in and the work would have taken eight months to complete. The Douglas DC-6A was also suggested as it would have required less civil engineering but it was not in production for the US military. Thus the British need not have been afraid of being sidelined by natural growth in the American task force's capability for the foreseeable future. The issue was rather whether the US

⁹ TNA, AIR 2/10064, Es:174-178 Tunner undated covering letter and HQ CALTF 'Introduction of very heavy transport aircraft into the Berlin Airlift' 4 April 1949; USNA, RG341, Headquarters U.S. Air Force (Air Staff) 1934 - 2004, Top Secret Decimal Correspondence Files compiled 1942 - 1954, Germany 381, NM-15-335A, Box 808, attachment to Major General Anderson 13 April 1949 'Factors and Implications affecting the continuation of Operation Vittles at the present or on an expanded scale'.

military would have had the assets and the infrastructure to deliver the tonnages being planned for it in the long-term Airlift.

Chapter 6 also considered if an American Civil Lift might have been a possibility. The USAF had identified that over 200 DC-4s and DC-6s were operated by American scheduled and unscheduled airlines which it deemed as available for use in an emergency. Contracting with US civilian companies and diversion of aircraft from airline use would have taken time. Moreover, the primary reason for the efficiency of the American Airlift lay in it being a military operation and introducing contractors could have degraded overall performance. Also the American task force was supported by a logistic tail that stretched back into and across the USA and which relied heavily on a variety of military and chartered aircraft. If either had been swapped to cargo delivery into Berlin, it would have affected that supply chain adversely. Nevertheless, given enough lead time and political acceptance of paying charter rates, a joint American civilian-military task force might have undertaken the Airlift on its own. The questions about the viability of the long-term plans, of course, would have remained.

The second way in which British airborne participation might have become redundant - the final research question - was by locating all of the American 1st ALTF aircraft to the Northern Zone of Germany? This question explores a view expressed at the time: that aircraft based on airfields on the eastern side of the Northern Zone should haul noticeably more per day than those located in the Southern Zone. This move would have necessitated accommodation for a total of 230 American aircraft and again the preferred locations would undoubtedly have been around RAF Fassberg. To achieve this would have necessitated more civil engineering than would have been needed for the option of deploying additional Skymasters discussed above as more aircraft would have been involved. Moreover, positioning all the American aircraft in one small area of Germany would have resulted in periods when operations there would have been curtailed by bad weather locally and so standby airfields would have been needed in other parts of western Germany - able to both receive diverted aircraft and then to despatch them fully loaded to Berlin.

In the spring and early summer of 1949 the Northern Zone Skymasters did not achieve the extra trips per day over the ones based in the Southern Zone that had been anticipated when the idea of relocation had been suggested. It remained true that basing the whole US task force in the Fassberg area would have increased the tonnage delivered to Berlin but the amount would have been insufficient to have replaced the British in total or even just the RAF and the dry lift component of the British Civil Lift. Had it been decided to replace the British - either by choice or through necessity - then a combination of the relocation of 1st ALTF just described and deployment of additional American aircraft would have been the best option. For example, in May 1949 an additional 19 Skymasters operating on the Northern Zone airfields alongside all of 1st ALTF would have replaced the RAF and the dry lift element of the Civil Lift. With additions to the Great Falls AFB training facility and the pipeline and overhaul pool, 29 extra Skymasters would have been needed. The question about the viability of the tonnages being proposed for the long-term Airlift would have remained, however.

To summarize the answer to the question about whether the participation of British aircraft was essential to the Airlift's overall success, the thesis shows that the utilization rates of the British aircraft were poorer than those of the Americans and especially so in the case of the RAF. In spite of this, the capacity of the two British air fleets was needed logistically. Replacement of this capacity by the Americans would not have been easy particularly when the plans for the Airlift to continue into 1951 are taken into consideration. The US military Skymaster force could not have done it alone nor could relocating all of the existing American task force to airfields around Hanover. A combined force of American military and civilian aircraft, located in the east of the British occupation zone, might have succeeded if sufficient lead time and funds were available but only after civil engineering enhancements to airfields. In the case of the very heavy transports - that were expected to enter service in the early 1950s - these would have had to be very extensive and have included Berlin. We must conclude, therefore, that participation of British aircraft would have been necessary for the foreseeable future.

Turning to the subsidiary but related area of research into how fundamentally the application of logistics differed between the Airlift and hot wars up until that point,

the thesis shows that the Airlift's objective was to sustain over two million in western Berlin. Rather than its normal position in the military repertory, buried in the "admin tail", logistics was thus the fundamental purpose of the operation. In hot wars, conditions often change quickly necessitating flexibility and even at junior levels, initiative. The Airlift was a more stable event allowing its logistics systems to be approached in a technological way with the higher formations - and especially CALTF - designing the processes and over-seeing their implementation which were then undertaken in a standard way. Unapproved initiatives were not encouraged. As Appendix 7 identifies, it was a systems engineering approach.

The last part of this chapter summarizes what the thesis has added to the historiographies of the Berlin Airlift and air logistics in what has been described as 'the first humanitarian airlift of the Cold War, and the largest in History'.¹⁰ It has applied a hybrid set of methodologies constructed from those of the historian and the logistician to a substantial amount of material about the Airlift and the British contribution in particular which as Chapter 1 showed has been inadequately covered previously. It has shown how the British element of the Airlift worked and empirically - for the first time - that the RAF and Civil Lift aircraft were necessary for the logistical success of the total Anglo-American operation and would have continued to be so in the long-term commitment being planned. The differences between American and British performance have been examined and low aircraft utilization, especially by the RAF, revealed as a cause additional to the explanation publicized at the time about the US task force having more and larger aircraft. In part this was due to Government priorities before the Airlift and its politicians' aspirations to deliver tonnages beyond the capability of the post-war RAF. The USA's capability to replace the British aircraft by deploying more aircraft has been explored and contemporary Foreign Office and RAF concerns about this occurring through natural expansion of the American capability have been shown to be unduly pessimistic. Furthermore, the growth in tonnage delivered to Berlin that was anticipated at the time to result from positioning all of the US 1st ALTF in the Northern Zone has been revealed to have been optimistic and less than would have

¹⁰ Daniel L. Haulman, [USAF Historian] *Wings of Hope: The U.S. Air Force and Humanitarian Airlift Operations* (Air Force History and Museums Program, Air Force Fiftieth Anniversary Commemorative Edition: 1997) p. 3.

been required to replace the British. The thesis has also exposed the doubts in the Air Ministry, the [US] Department of the Air Force and HQ CALTF about the viability of the evolving plans for the long-term Anglo-American Airlift. Finally, it has revealed how the Airlift's approach to the logistics - based on the rigorous application of carefully evolved standard procedures - differed fundamentally from that applied in hot wars.

This research has been unable to establish with certainty why the Soviet leadership reacted to the Airlift in the way it did (Page 9 above). A second gap is the absence of the Transport Command post-operation report (Page 16 above). From the Air Ministry correspondence about it, this document may not have the significance that resolving the uncertainty about Soviet reactions would have, but it is a shortfall that research by Western historians is more likely to fill. However, the principal area for future study arising from this thesis is to expand the historiographies of logistics and airpower to cover in depth from a supply aspect other specific historic uses of military aircraft in an air sustainment role. The first example of this might be the 1944 Siege of Imphal and the airlift thereafter in support of the advance into Burma which was one of the precedents in Chapter 3.

THE SIEGE OF LENINGRAD

The Soviets made strenuous efforts to deliver supplies during the Siege of Leningrad even when their prime objective was the defence of Moscow. Although haulage was almost entirely by surface means, the siege could have served as a precedent for the Soviets when considering how the Americans might respond to the Berlin Blockade (see Chapter 3). This Appendix summarizes salient points including the tonnages moved; the civilian population's rations, and conditions generally. The civilian dimension also allows comparison with the Berlin Blockade albeit the German intention was to starve the Leningraders whilst the Soviets offered the opportunity for western Berliners to register for rations in the eastern sector (see Chapter 4 above). The Appendix includes references to Pavlov's *Leningrad v Blockade* as its statistics appear realistic and not propaganda. Even so, because of the conditions pertaining during the siege, figures cited below should be treated as indicative.¹

Between September 1941 and January 1943 the Germans and Finns laid siege to Leningrad, its environs, and territory to the south of the Neva River and Lake Ladoga. 2,850 square kilometres came under "siege" including a corridor to Lake Ladoga via basic roads and the single track, 55 kilometre-long, poorly equipped Irinovskii railway and from there to the rest of the unoccupied Soviet Union across the lake.² Appendix 2 is a map of the routes used during the siege and a visual appreciation of the effort needed to breach the blockade.

¹ Dmitri Vasilievich Pavlov, trans. John C. Adams, *Leningrad 1941: The Blockade* (Chicago: Chicago University Press, 1965) pp. vii, xiii, xvii-xviii, xxiii-xxiv, 48-49; Harrison E. Salisbury, *The Siege of Leningrad* (London: Secker and Warburg, 1969) p. 294. First edition of Dmitri Vasilievich Pavlov's monograph was released in 1958, with a second edition published in 1961. The J. C. Adams translation is cited in the thesis. Pavlov was a civil servant, a specialist in food production, who was despatched to Leningrad on 8 September 1941 to deal with both military and civilian food supply.

² John Erickson, *Road to Stalingrad* (London: Weidenfeld and Nicolson, 1977) pp. 170, 191, 195; David M. Glantz, *Leningrad: City under Siege 1941-1944*, (Rochester: Grange Books, 2005) pp. 33, 68-69, 75, 116 125, 166, 190; David M. Glantz, *The Battle for Leningrad 1941-1944* (Lawrence KS: University Press of Kansas, 2002, BCA edn., 2004) pp. 15-16, 124, 136, 234, 260-262; David M. Glantz, *Before Stalingrad: Barbarossa - Hitler's Invasion of Russia 1941* (Stroud: Tempus, 2003) pp. 102, 108; Michael Jones, *Leningrad: State of Siege* (London: John Murray, 2009) pp. xvii, 41, 113; Pavlov, pp. 15-16, 18, 31-32, 58, 155-156; Salisbury, pp. 16, 309-315, 330-331, 345, 409, 420.

Port facilities on the lake's western shores verged on the non-existent and those at Novaya Ladoga were poor.³ Most of the Lake's barges and tugs had been trapped in the River Neva and fragile river barges had to be used in declining autumn weather of 1941.⁴ Infrastructure, shipping and ice routes were under attack.⁵ Consignments had to be reloaded four times between the railhead at Gostinopolye and Leningrad.⁶ The Lake was impassable while winter ice was forming or thawing. Water transport across Lake Ladoga ended on 30 November 1941 when naval warships made the last deliveries.⁷ Horse drawn sledges had started to move on 20 November 1941⁸ and the first motor convoy reached the western shore on the evening of 22 November 1941⁹.

In November 1941 the Germans occupied Tikhvin (cutting the last Moscow-Ladoga railway line), the port of Gostinopolye, and the outskirts of Volkhov and Voibokalo.¹⁰ A 320 kilometre forest and ice road was built from Zaborye railway station to Osinovets via Novaya Ladoga and Lednevo on Lake Ladoga. The 200 kilometre forest portion was completed on 6 December 1941. The road, which took 14 days for the return trip from Zaborye to Novaya Ladoga, was abandoned on 25 December 1941 after the Germans were forced back from Volkhov and Voibokalo.¹¹

Initially thereafter freight moved by road and ice road between Tikhvin and Osinovets via Kabona, a distance of 190 kilometres with the return trip taking at least two days.¹² After the Germans retreated from Zhikharevso there was a combined road-rail route from Tikhvin to Osinovets via Kolchanova Station and either

³ Pavlov, pp. 96-97; Salisbury, p. 408.

⁴ Pavlov, p. 99.

⁵ Pavlov, pp. 97, 99-102, 160-161, 165; Salisbury, pp. 380-382, 413.

⁶ Pavlov, pp. 50, 96-99; Salisbury, pp. 294, 380.

⁷ Glantz, *City under Siege*, pp. 69-70; Pavlov, pp. 115-117, 137-138.

⁸ Pavlov p. 137.

⁹ Pavlov, p. 137; Salisbury, p. 412.

¹⁰ Erickson, *Road to Stalingrad*, pp. 254-255; Glantz, *City under Siege*, pp. 45, 49-51, 53-54; Glantz, *Battle for Leningrad*, pp. 90, 100-101; Pavlov pp. 107-109, 113-114, 138; Salisbury, pp. 386-387, 412-414.

¹¹ Erickson, *Road to Stalingrad*, pp. 255, 262-264; Glantz, *City under Siege*, pp. 50, 53-54, 76; Glantz, *Battle for Leningrad*, p. 108; Pavlov, pp. 103, 114-116, 138-140, 145; Salisbury, pp. 381, 405-406, 412-414.

¹² Pavlov, p. 151.

Voibokalo or Zhikharevso.¹³ On 1 January 1942 the first through train ran from Tikhvin to Voibokalo.¹⁴ On 10 February 1942 a 34 kilometre railway opened between Voibokalo Station and the Lake shore at Kabona.¹⁵ By the season's end there were six ice roads in use.¹⁶ The last cargoes via the ice road arrived on 24 April 1942.¹⁷

Shipping restarted on Lake Ladoga on 22 May 1942.¹⁸ On 18 June 1942 a welded fuel pipe was completed under the Lake to deliver liquid fuels at 295 tonnes per day¹⁹ and in September 1942, the City started to receive electrical power transmitted across the lake from Volkhov by underwater cable²⁰. The first ice road convoy in the winter of 1942-1943 arrived on the western shores on 20 December 1942 and the ice road ended on 30 March 1943.²¹ At the start of the 1942-1943 ice season work had begun building a railway across the Lake.²² On the 18 January 1943 Leningrad was reconnected by land to the rest of the unoccupied Soviet Union along the recaptured 10-12km wide Schluesselburg corridor beside the southern shore of Lake Ladoga and a railway was quickly constructed²³. This was augmented later by a second railway line further from the new frontline.²⁴ Railway deliveries began on 6 February 1943 with cargoes initially concentrating on coal for the power stations and thus electricity for the City's residual industry.²⁵ After September 1943 the importance of the Lake

¹³ Pavlov, p. 151.

¹⁴ Pavlov pp. 151-152.

¹⁵ Pavlov, pp. 162-163.

¹⁶ Glantz, *Battle for Leningrad*, p. 141 - Map 10; Pavlov, pp. 153- 160; Salisbury, p. 504 - in winter temperatures reached minus 40°C and blizzards were severe.

¹⁷ Salisbury, p. 513.

¹⁸ Glantz, *Battle for Leningrad*, p. 141 Map 10; Salisbury, pp. 526-527.

¹⁹ John Erickson, *The Road to Berlin* (London: Cassell Military Paperbacks, 2003) pp. 61, 167; Glantz, *The Battle for Leningrad*, p. 243; Jones, p. xx; Salisbury, p. 526. 19 June also cited as the start date for pipeline deliveries.

²⁰ Glantz, *Battle for Leningrad*, p. 243; Jones, p. 271.

²¹ Glantz, *City under Siege*, pp. 119-120, 189.

²² Glantz, *Battle for Leningrad*, pp. 246-247.

²³ Glantz, *Battle for Leningrad*, pp. 246-247.

²⁴ Glantz, *City under Siege*, p. 119.

²⁵ Erickson, *Road to Berlin*, pp. 61, 167; Glantz, *City under Siege*, pp. 118, 136, 139; Salisbury, pp. 548, 550-551.

Ladoga supply routes diminished as the capacity of the recaptured corridor grew.²⁶

As mentioned above, figures are indicative and sources differ. The ones cited here are intended to give an example of what was achieved and not to formulate definitive statistics. 51,000 tons were delivered to the Leningrad shore between the start of the siege and the end of the 1941 shipping season of which 25,000 tons was food.²⁷ The daily target for the 1941-1942 ice road was set at 2,000 tonnes which was not achieved regularly until February 1942 when the average became 3,000 tons.²⁸ It reached 3,700 in March and dropped to 2,900 in April as the thaw approached. In total the 1941-1942 ice road had delivered 356,000 tons of freight (2,300 tons per day) including 271,000 tons of food.²⁹ The 1942 shipping season delivered 703,000 tons of cargo (3,700 tons per day)³⁰; the 1942-1943 ice road 215,000 tons³¹, and the 1943 shipping season 148,000 tons³². Railway deliveries via the corridor became the principal means of supply and by the end of 1943, 4,500,000 tons had been delivered (7,600 tons/day).³³ For comparison, in August 1948, the second complete month of the Berlin Airlift, the daily average was 3,839 short tons.³⁴

Leningrad, including its garrison, started its siege with nearly 2,887,000 civilians to feed and so had a bigger population than western Berlin's 2,118,631.³⁵ Between

²⁶ Glantz, *City under Siege*, pp. 119-120, 189.

²⁷ Pavlov, pp. 103-104, 162; Salisbury, pp. 380-382. Glantz, *Battle for Leningrad*, p. 133 gave a larger figure totalling 60,000 tons.

²⁸ Glantz, *Battle for Leningrad*, p. 140.

²⁹ Salisbury, pp. 493, 513. Glantz, *Battle for Leningrad*, p. 144 - Glantz figures differed from Salisbury's being 361,109 tons in total including 262,419 tons of food plus 2,000 tons of special foods; 34,717 tons of fuels and lubricants, and 22,818 tons of coal.

³⁰ Salisbury, pp. 526-527. Glantz, *Battle for Leningrad*, p. 243-244 - Glantz cited a longer period and larger figures: 779,586 tons in total with half being food and 310,000 reinforcements.

³¹ Glantz, *Battle for Leningrad*, p. 247; Glantz, *City under Siege*, p. 189.

³² Glantz, *Battle for Leningrad*, p. 248.

³³ Erickson, *Road to Berlin*, pp. 61, 167; Glantz, *City under Siege*, pp. 118, 136, 139; Salisbury, pp. 278, 548, 550-551.

³⁴ HQ BAFO, AP3257 *A Report on Operation PLAINFARE (The Berlin Airlift) 25th June 1948 - 6th October 1949* (Bielefeld: Control Commission, 1950) App. R.

³⁵ Control Commission for Germany (British Element), *Notes on the Blockade of Berlin 1948: from a British viewpoint in Berlin* (Berlin: Printing and Service Control Commission for Germany (BE), 1949) p. 17; Salisbury, pp. 294-295. Salisbury estimated the Leningrad Footnote continues on next page.

August 1941 and the end of 1943 about 1,000,000 Leningrad civilians were evacuated to the unoccupied Soviet Union, substantially more than from western Berlin during its blockade. The decline in the City's civilian population, including through death, is shown in Table 1.A.³⁶

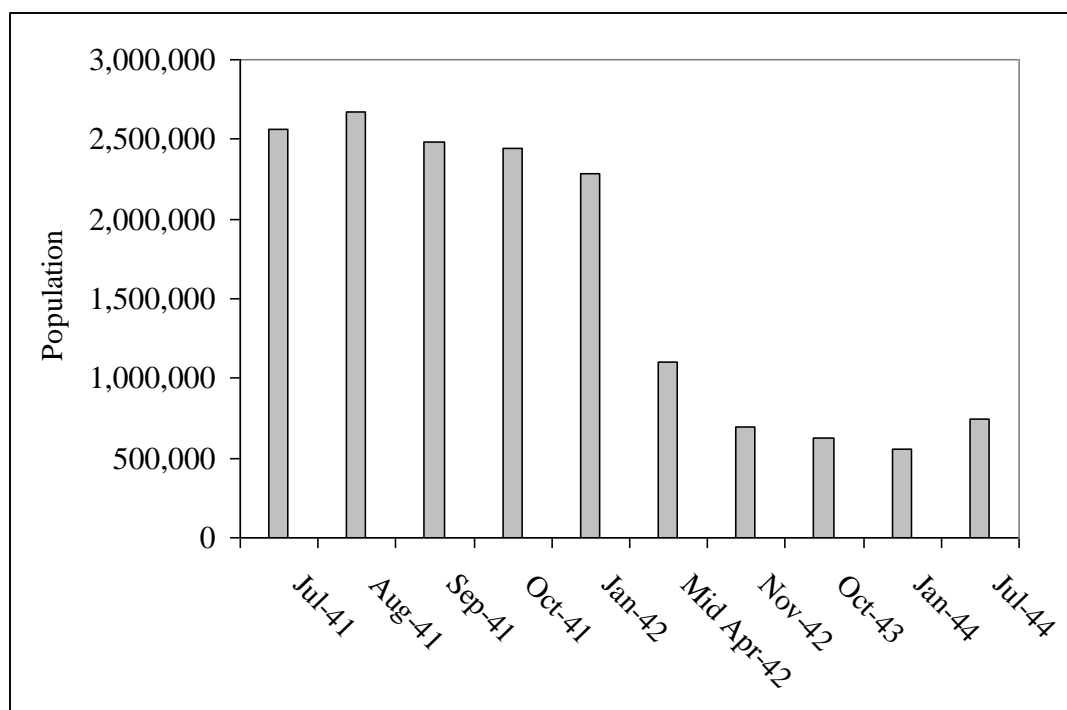


Table 1.A: Leningrad Civilian Population

Food rationing was introduced based on military function and work status. Glantz cited seven fundamental norms but it is apparent that there were several other groups who received higher rations, substantially more in some cases. Bread was not the only ration but for many it was the main food and for periods the sole one.³⁷ The

garrison at approximately 500,000.

AP3257, p. 279 - 2,250,000 'living in a city'.

³⁶ Glantz, *Battle for Leningrad*, p. 241; Salisbury, pp. 492, 515, 575.

³⁷ Glantz, *Battle for Leningrad*, p. 133; Darra Goldstein, 'Women under Siege: Leningrad 1941-1942' (Williams College), in *From Betty Crocker to Feminist Food Studies: Critical Perspectives on Women and Food*, ed. by Barbara Haber and Arlene Avakian (Amherst, MA: University of Massachusetts Press, 2005); Jones, pp. xxi-xxii, 193, 195, 196-197, 217, 288; Pavlov, pp. 52-53, 67, 77, 79, 118, 132, 149, 160; Anna Reid, *Leningrad: Tragedy of a City Under Siege, 1941-44* (London: Bloomsbury, 2011) pp. 166, 263-265 - food used for reward and coercion; Salisbury, pp. 388, 390, 403, 492, 499, 503.

three principal civilian norms for autumn and winter 1941-1942 are given in Table 1.B.³⁸

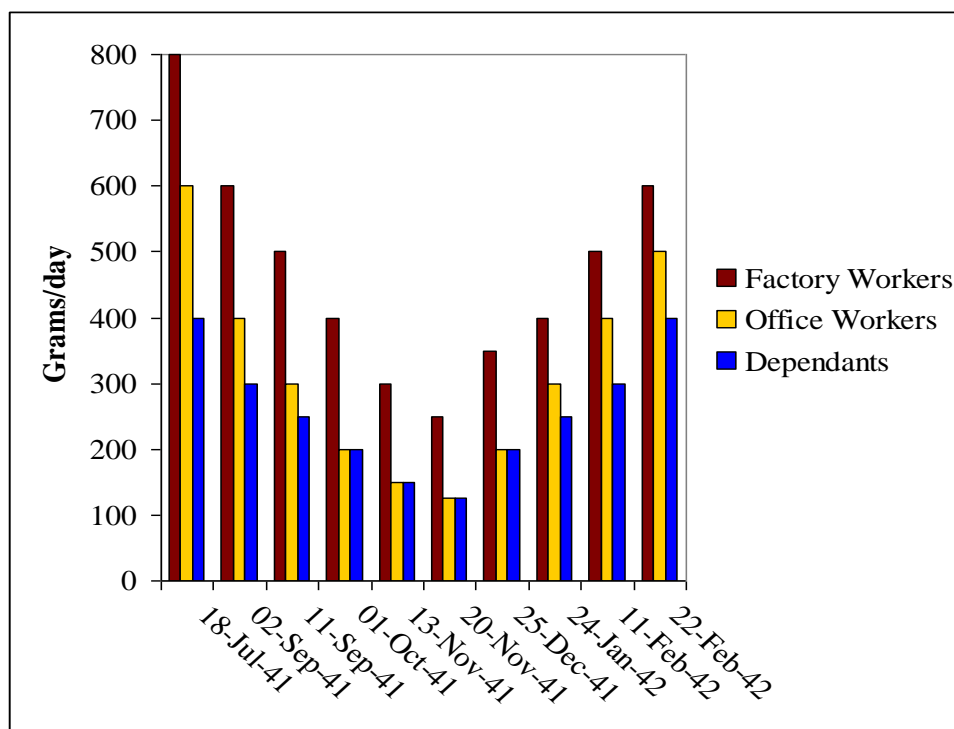


Table 1.B: Principal Leningrad Bread Norms

Civilian rations included entitlement substitutions, for example powdered egg in lieu of meat.³⁹ Factory workers who became unemployed when factories closed during the winter of 1941-1942 were reassigned to a dependant's rations with potentially serious implications.⁴⁰ During the Berlin Blockade foods were substituted but unemployment did not result in starvation rations.⁴¹ In Leningrad entitlements were not always met in full and the civilian population received little but bread through November, December and January.⁴² Bread supplies were intermittent during January 1942 and towards the end of the month there may have been a complete

³⁸ Jones, p. xxii - courtesy of the Museum of the Blockade, St Petersburg; Pavlov, pp. 52-53, 77, 79 118, 149, 160.

³⁹ Pavlov, pp. 74-75, 77, 79, 117.

⁴⁰ Glantz, *City under Siege*, p. 75; Jones, pp. 4, 93, 175, 181, 208, 214; Pavlov, pp. xvii, 54-55, 74-80, 122; Salisbury, pp. 292, 296, 367-368, 377.

⁴¹ Walter Phillips Davison, *The Berlin Blockade* (New York: Arno Press, 1980) pp.-313-314. See thesis Chap. 4.

⁴² Pavlov, pp. 76, 78, 120-121, 144; Reid, pp. 282, 298-299.

collapse in the distribution system with some citizens unable to obtain any food for a week.⁴³

Table 1.C displays in two parts the daily theoretical calorific values of the citizens' rations in December 1941.⁴⁴ It is based on the assumption that a full entitlement was received which was most unlikely. It is theoretical because of the adulteration of food. Modern research points to the dependant's 466 calorie figure being closer to 300.⁴⁵ The calorific values for the western Berlin rations in December 1948 are also shown to emphasize how substantially greater they were.⁴⁶

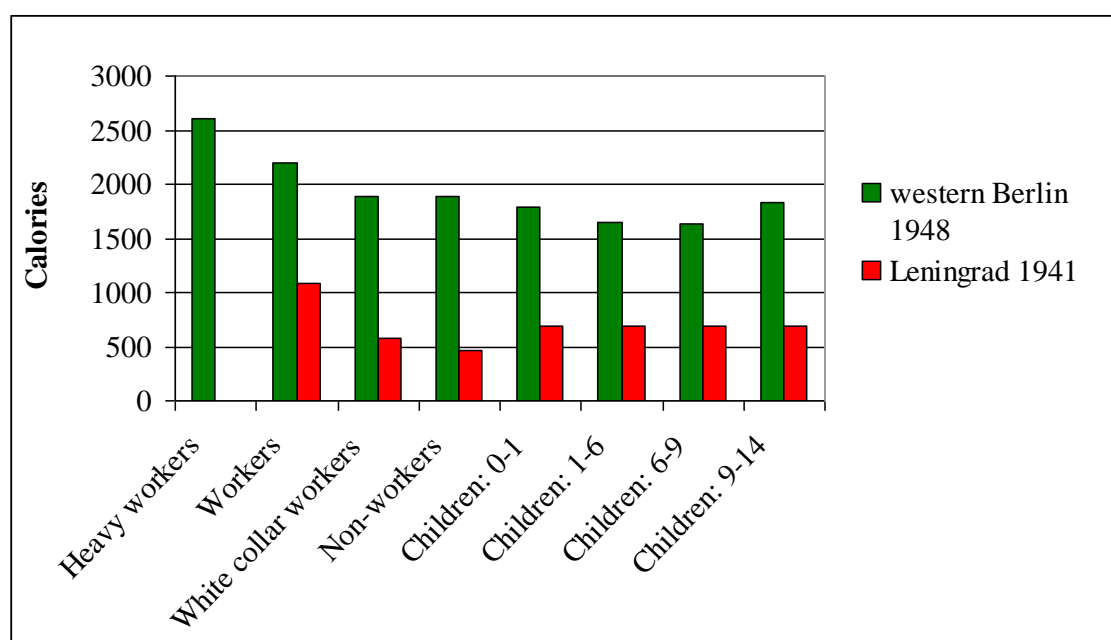


Table 1.C.1: Calorific intake Leningrad and Western Berlin - Graphical Summary

⁴³ Jones, pp. XXI, 159, 195, 202, 204-205, 208-209, 215; Salisbury, p. 455.

⁴⁴ Control Commission, *Notes*, p. 18; Jones, p. xxi; Pavlov, p. 122.

⁴⁵ Reid, p. 168. In late November 1941 bread adulteration was: 10% edible cellulose, 10% cottonseed cake, 2% chaff, 2% meal dust, 3% corn flour, leaving 73% rye flour but bread was sold by weight, and when baked the rye weight fell to 59.5% - Goldstein, pp. 5-6; Pavlov, p. xvii.

⁴⁶ Erickson, *Road to Stalingrad*, pp. 262-263; Glantz, *City under Siege*, pp. 71-72; Glantz, *Battle for Leningrad*, p. 138; Goldstein; Jones, pp. 142-143; Pavlov, pp. 58, 60-65; Salisbury, pp. 370, 389.

<u>Leningrad 1941</u>		<u>western Berlin 1948</u>	
Category	Calories/day	Category	Calories/day
		Heavy workers	2609
Factory workers	1087	Workers	2202
Office workers	581	White collar workers	1882
Dependents	466	Non-workers	1882
Children	684	Children: 0-1	1786
		Children: 1-6	1653
		Children: 6-9	1633
		Children: 9-14	1834

Table 1.C.2: Calorific intake Leningrad and western Berlin - Detail

When lack of fuel caused power stations to stop, the piped water supplies and sewers froze; the public baths and laundries closed; trams stopped; factories fell idle, and hospitals lost their heating and their electricity.⁴⁷ In midwinter houses were without light, hot water and heating other than that which could be provided by scavenged wood, firewood and peat collected from wrecked buildings, the suburbs and the unoccupied northeast but it was never enough.⁴⁸ Increased quantities of food at last started to reach the shops in the second half of February 1942.⁴⁹

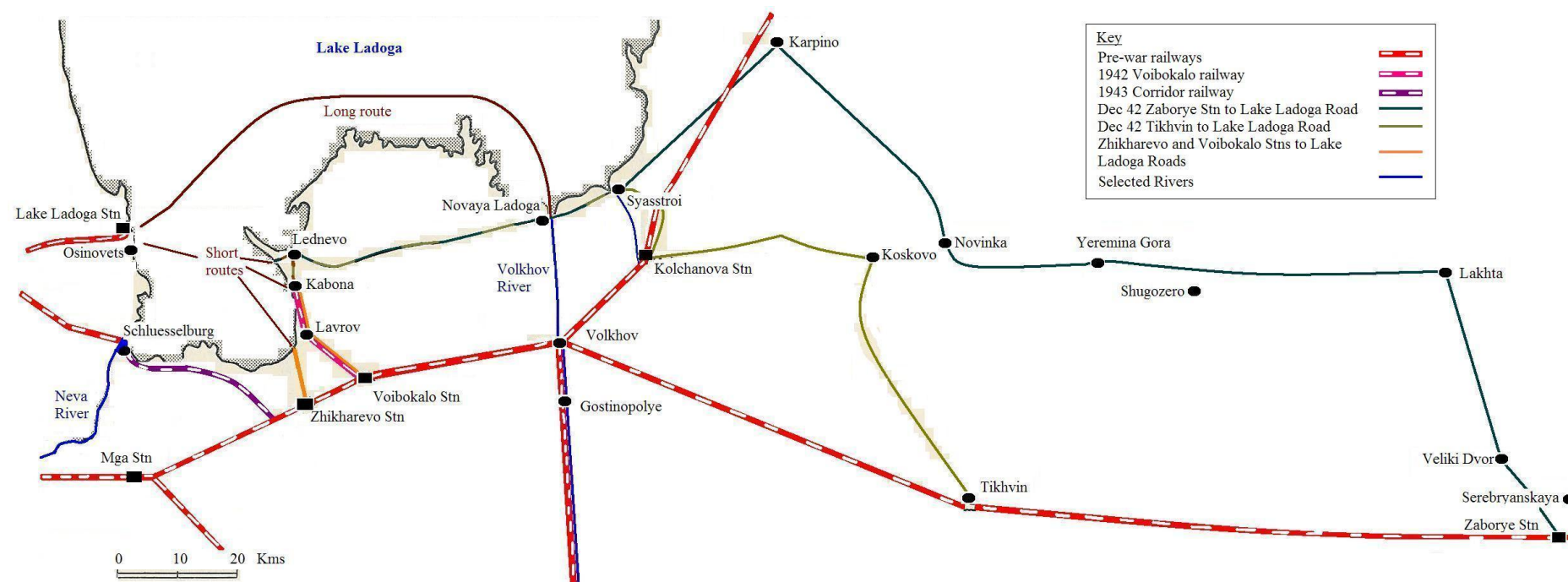
⁴⁷ Glantz, *City under Siege*, pp. 72, 112; Glantz, *Battle for Leningrad*, pp. 135, 239; Jones, pp. 164, 207-208; Pavlov, pp. 33, 41; Salisbury, pp. 456-458, 507.

⁴⁸ Glantz, *City under Siege*, pp. 72 75-76; Glantz, *Battle for Leningrad*, pp. 135-138; Jones, p. 205; Pavlov, pp. 132-133; Salisbury, pp. 456-458.

Goldstein: only five hours of twilight and -34°F temperatures.

⁴⁹ Jones, pp. 229; Pavlov, p. 179.

SIEGE OF LENINGRAD 1941-1944 - MAP OF PLACES AND TRANSPORT INFRASTRUCTURE



Siege of Leningrad - Map of Places and Transport Infrastructure¹

¹ Dmitri V. Pavlov, trans. John C. Adams, *Leningrad 1941: The Blockade* (Chicago: Chicago University Press, 1965) Maps 4, 5, 6, 7.

COMPARISON OF AIRCRAFT UTILIZATION DATA FOR JUNE 1949

Appendix 3 uses the C-54s based at RAF Fassberg and RAF Celle and RAF Yorks at RAF Wunstorf to show the range of figures that were recorded for June 1949 by different organizations for the same or apparently similar statistics. The results of Charlesby's smoothing exercise are then included for comparison. These adjusted for the different ways that the nations counted aircraft assigned/on strength. For example American figures included those on 200 hour inspections whilst RAF assets on 100 hour ones were not.

CALTF Records:¹

	<u>RAF Fassberg</u>	<u>RAF Celle</u>
Average Assigned	45.94	41.06
Average in Commission	26.42	26.66
Daily Trips per assigned aircraft	3.6	4

USAF *Statistical Digest Jan 1949 - Jun 1950*:²

	<u>RAF Fassberg</u>	<u>RAF Celle</u>
Average Assigned	48.3	44.6
Average in Commission	25.6	26.5
Daily Trips per assigned aircraft that landed in Berlin	3.5	3

¹ AFHRA, IRISNUM 241489, CALTF Statistical Summary.

² Department of the Air Force, Operations Statistics Division, *United States Air Force Statistical Digest Jan 1949 - Jun 1950 Fifth Edition* (Washington DC: US Government, 1951).

A USAFE Summary: The bar charts indicated about 58% of RAF Fassberg's C-54s were in commission and about 62% of RAF Celle's.³

BAFO Form STATS 120⁴:

	<u>RAF Fassberg and RAF Celle</u>	<u>RAF Wunstorf</u>
Average Strength	86.7	37.9
Average used daily	74	29.5
Daily Trips per on-strength aircraft	3.6	2

Charlesby's Smoothing Exercise:⁵

	<u>RAF Fassberg</u>	<u>RAF Celle</u>	<u>RAF Wunstorf</u>
Average Assigned	45.9	41.1	64.9 (37.9 in BAFO and 27 in UK)
Daily Trips per Assigned Aircraft	3.6	3.6	1.2

Table 3A summarizes these comparisons graphically.

³ HQ USAFE, *Berlin Airlift: A USAFE Summary, 26 June 1948-30 September 1949* (HQ Ramstein AFB: USAFE reproduction Centre, undated, circa 1950) p. 98. Note the caution in source about disparity between USAFE sources. This is the higher figure.

⁴ TNA, AIR 55/110, Monthly Form STATS 120 records.

⁵ TNA, AIR 55/102, Charlesby 21 July 1949.

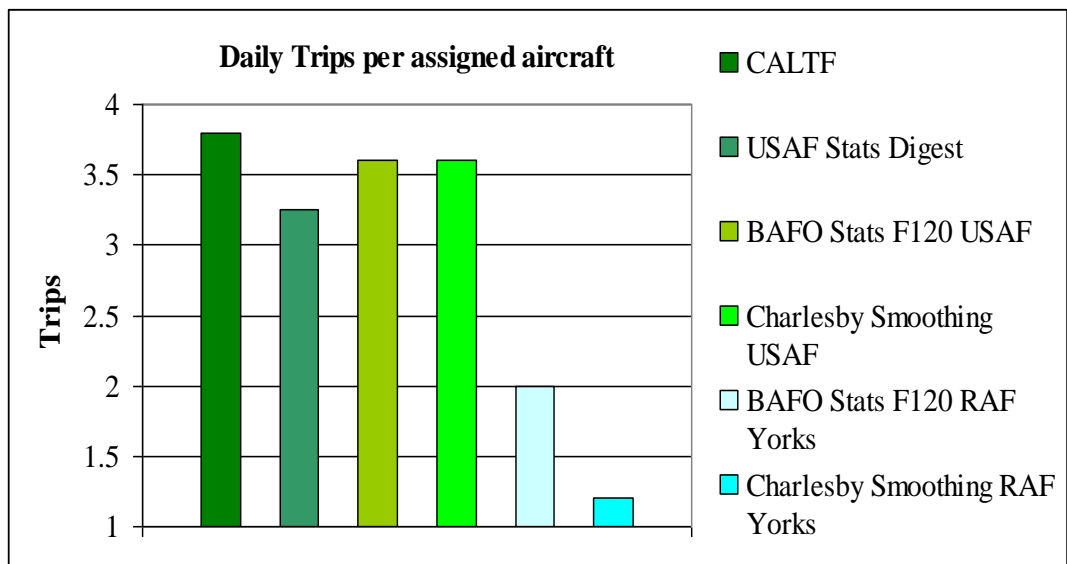
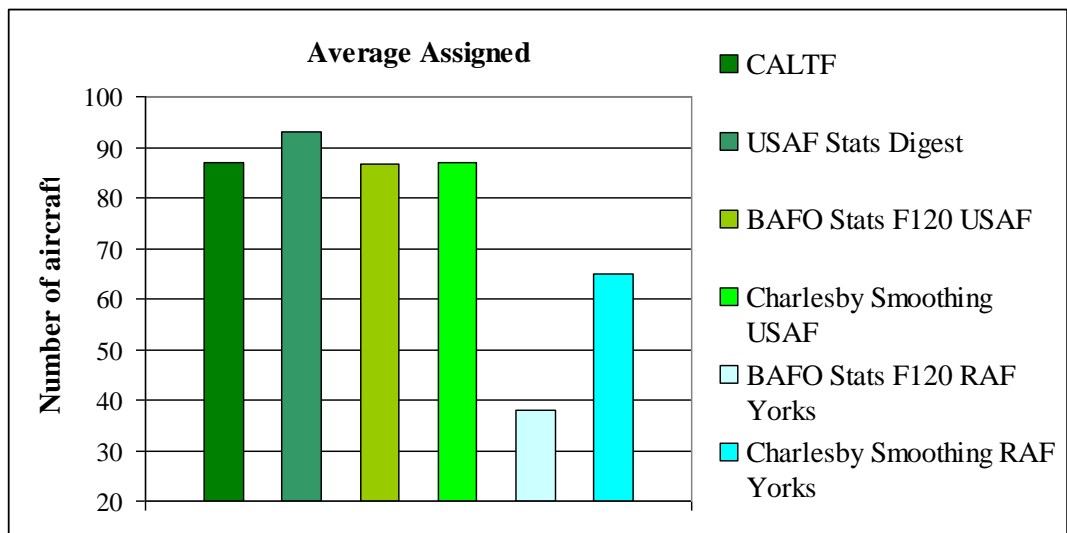


Table 3A: Comparison of Aircraft Utilization Data for June 1949

**AIRCREW AND AIRCRAFT RESOURCES PLANNED FOR JUNE 1949 -
APRIL 1950**

Table 4.A is a précis of Transport Command's planning figures for June 1949 through April 1950. The need to meet the requirements in the Table and the rotation plans from April 1949 to the end of December 1949 was expected to require an additional 130 pilots, 124 Navigators 172 signallers and 98 engineers.¹

¹ TNA, AIR 2/10064, Es:251-260 Mackworth 6 April 1949 with Appendixes.

	<u>Monthly Average</u>					
	<u>Trips/day</u>	<u>Crews in Germany</u>	<u>Total crews</u>	<u>Aircraft in Germany</u>	<u>Total Aircraft</u>	<u>Short tons/day</u>
<u>Hastings</u>						
June- December 1949	54.3	54.3	74.3	27.4	40.9	500.4
January-April 1950	68.5	68.5	114.0	34.5	52.0	634.5
<u>York</u>						
June- December 1949	66.3	59.9	102.9	30.7	52.3	563.4
January-April 1950	60.0	54.0	89.0	28.0	48.0	510.0
<u>Dakota</u> ¹						
June- December 1949	84.1	76.7	73.7	42.9	67.7	293.7
January-April 1950	76.0	69.0	61.3	38.0	60.0	266.0

Table 4.A: Aircrew and Aircraft Resources Planned for June 1949 - April 1950

¹ Included RAAF, RNZAF, SAAF contingents totalling 33 aircrews. TNA, AIR 28/978, ORB RAF Bassingbourn recorded RAAF, RNZAF and SAAF strengths.

BERLIN AIRLIFT - MAP OF AIRFIELD LOCATIONS**Berlin Airlift - Map of Airfield Locations**

STATISTICAL DISPARITY

The example tonnages in Table 6.A are taken from the manuscript daily log of the Air Ministry Central Statistics Branch, the BAFO F STATS 120, and the Berlin ALREPS for the period 1 May 1949 and 14 May 1949. They display for the sample fortnight persistent differences in the tonnages with the Air Ministry figures always being higher than those recorded in Berlin.¹

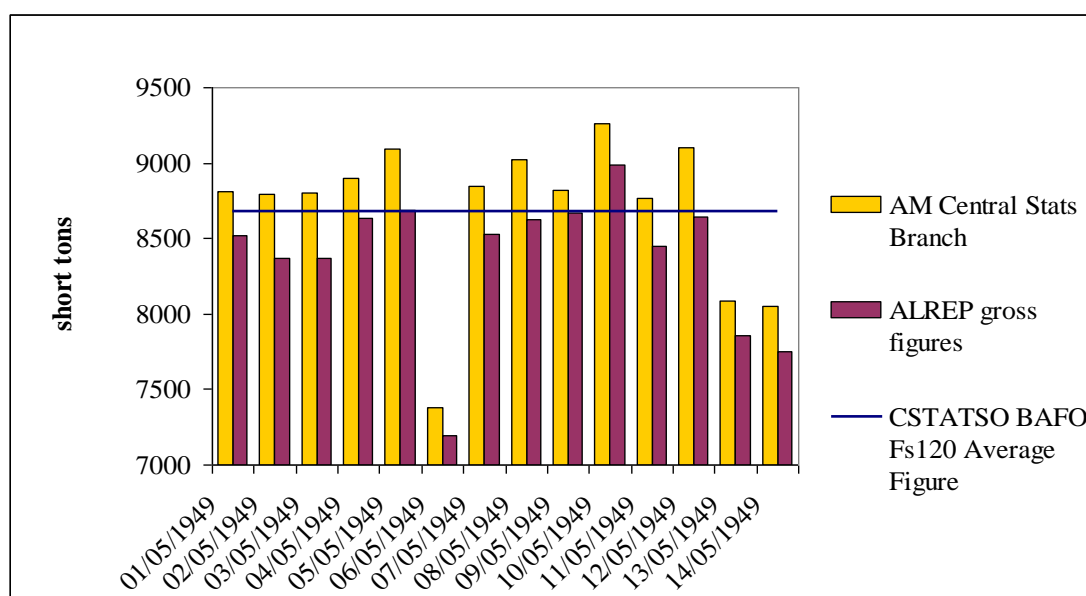


Table 6.A: Example Statistical Disparity

¹ TNA: AIR 19/621; AIR 20/7285; AIR 55/110.

APPLICATION OF AIRLIFT LOGISTICS

Martin Van Creveld's *Supplying War: Logistics from Wallenstein to Patton*¹ evaluated the impact of supply in hot wars. The thesis is not a critique of *Supplying War* nor is it an exploration of subsequent material that supported, extended or opposed his conclusions. The book provides a basis against which this appendix identifies fundamental differences in the application of logistics in hot wars up until the end of the Second World War and the Airlift's Cold War sustainment mission. The appendix, moreover, addresses the airbridge as a whole and not just the British component.

Van Creveld studied offensive land-based campaigns, not sieges nor blockades. The Airlift was a defensive activity targeted at supporting mainly German civilians. Offensive operations require supply to reach mobile forces over increasing distances whereas the Airlift operated between static bases. In Van Creveld's examples, supply was delivered almost entirely by surface means and mainly by land. In Operations VITTLES and PLAINFARE, supply was by air. In hot wars, the enemy usually interfered with the lines of communication.² Harassment of the Airlift may have occurred but nothing more serious took place and on the ground the Soviets continued to supply electricity to RAF Gatow.

An advancing army may be able to pillage and to use captured stores (for example, France 1940, North Africa 1940-1942).³ In Berlin 4% of the civil population of the western sectors opted for Soviet Zone ration cards; the blockade was porous, and there were limited Soviet stocks stored in western sectors that were "borrowed". Stockpiles of essential commodities had been built up between the Little Lift and the

¹ Martin Van Creveld, *Supplying War: Logistics from Wallenstein to Patton*, 2nd edn. (New York: Cambridge University Press, 2004, [1st edn. published 1977]).

² Ian R. Gooderson, 'Allied Close Air Support 1942-1945' (doctoral thesis, London University, 1994); Richard Keen, 'The Development of the Fighter-Bomber by the Western Desert Air Force between 14 October 1941 and 30 June 1942' (master's thesis, Buckingham University, 2010).

³ Van Creveld, pp. 146-147, Chap. 6.

Blockade.⁴ The supply chain supporting a Second World War army's advance consumed its own seed corn, for example fuel for vehicles, rations for the drivers and mechanics, spares for maintenance. In the Airlift, aircraft were refuelled in western zones and whenever possible, "unserviceable" aircraft were flown back to the western zones for rectification. Increases to garrisons in western Berlin were minimized by making maximum use of local labour.⁵

Van Creveld recognized that armies appear to prepare 'as best they could on an *ad hoc* basis, making great, if uncoordinated, efforts to gather together the largest possible number of tactical vehicles, trucks of all descriptions, railway troops, etc., while giving little, if any, thought to the "ideal" combination which, in theory, would have carried them the furthest.'⁶ The British miscellany of aircraft and the involvement of the Civil Lift reflected that but it would be wrong to conclude that after the initial phases of the Airlift either country's efforts were 'uncoordinated' or that the British were unaware that theirs was not the 'ideal combination'.⁷

The sieges in the "Precedent Chapter"⁸ revealed a very visible need for supply support to troops whose prime function was to defend a position and if possible, to counterattack. With Berlin, there was no armed conflict. To maintain their position, the Western Occupation Powers had to sustain themselves and the western Berliners during the Blockade. In Van Creveld's scenarios the supply and transport staffs were part of the "admin tail" and subordinate to the "teeth arm" generals. In the Airlift, logistics⁹ became the "sharp end" and the transport aircraft - and thus their commanders and aircrews - a development of Napoleon's carts.¹⁰

The differences between the Airlift and Van Creveld's case studies indicates that different logistic models applied because of the different objectives and

⁴ Thesis Chaps. 2, 5, 6.

⁵ Thesis Chaps. 4-6.

⁶ Van Creveld, p. 236.

⁷ Thesis Chaps. 5-6.

⁸ Thesis Chap. 3.

⁹ Defined as the 'timely delivery of what is needed' - see Logistics in the Glossary of Terms.

¹⁰ Van Creveld, Chap. 2.

circumstances. Indeed, because of its size, nature, and the priority allocated to it by the American and British Governments, the Berlin Airlift may have been the sole occasion where supply was truly the dominant objective throughout a whole campaign.

Antoine-Henri Jomini considered that logistics was the practical art of moving armies.¹¹ NATO calls it a science and *AP3150* described movements as a science.¹² Art implies that there is creativity in every work with even copies of works of art having differences and this may be a valid view in the turmoil of offensive operations. Science, on the other hand, is based on the premise that the same reaction will repeat itself perpetually providing the conditions remain the same.

William Tunner wrote 'the efficient operation of an airlift is a science'.¹³ However, strictly, 'The application of scientific knowledge for practical purposes' is technology.¹⁴ The case for technology can be supported by the close involvement of the Scientific Adviser to the Air Ministry and the work studies by the US Army and the British Army Operational Research Group.¹⁵ It was reflected in the analytical approach to cargoes which included the formulation of lightweight nutritious diets that recognized the lack of power in Berlin to prepare food;¹⁶ more thermally

¹¹ I. B. Holley Jr., *Ideas and Weapons* (New York: Yale University Press, 1953 [Reprint Air Force History and Museums Program, 1997]) p. 12; Van Creveld, p. 1.

¹² MOD, *AP3000 British Air and Space Power Doctrine* <www.raf.mod.uk/rafcms/mediafiles/374E9EFB_1143_EC82_2EC09693E342D3C7.pdf> [accessed 29 June 2013] (Chap. 10, and 2.10.2); MOD, *AP3150: Royal Air Force Manual of Movements*, 3rd edn, Section 1, Leaflet A3.

¹³ William H. Tunner, *Over the Hump* (Washington DC, US Government Printing Office, 1985) pp. 175-178, 321.

¹⁴ Anon, *Oxford Dictionaries Online* <oxforddictionaries.com/definition/english/technology> [accessed 20 December 2012].

¹⁵ AM, 'Operation Plainfare', *RAF Air Clues*, Vol. 3, No. 12, August 1949; Dudley Barker, *Berlin Airlift: An account of the British Contribution* (London: HMSO, 1949) p. 14; HQ BAFO, *AP3257 A Report on Operation PLAINFARE (The Berlin Airlift) 25th June 1948 - 6th October 1949* (Bielefeld: Control Commission, 1950), App. K; Elizabeth S. Lay, Historical Division, Headquarters European Command, 'The Berlin Airlift: Part 2: 1 January-30 September 1949', *Occupation Forces in Europe Series 1948 -1949*, (Karlsruhe: 1952) pp. 32-33; TNA, WO 32/12671, Army Operational Research Group, Time and Motion Study of Air Supply (Operation Plainfare).

¹⁶ Barker, p. 9; Tunner, pp. 182, 205.

efficient petroleum products replacing coal;¹⁷ packaging being designed to reduce weight, cost and leakage including minimization of dust in aircraft,¹⁸ and container design assessing factors such as product lives, ease of replacement, and the need for manual handling and easy onboard stowage.¹⁹

Moreover, a technological methodology was applied to the logistical procedures. The Loading practices and movement of aircraft in transit within corridors and in the Berlin Air Safety Zone were modelled resulting in firmly imposed standard operating procedures [SOPs] aimed at delivering to Berlin the maximum tonnage per day.²⁰ SOPs were developed - coupled with associated training and equipment - to allow the Airlift to continue under most weather conditions with only a minimum reduction in performance. Examples were the bespoke US aircrew training at Great Falls before posting to the Airlift and the deployment of the [aircraft] Ground Controlled Approach (GCA) system. Standard aircraft loads were introduced - as far as practicable - to ensure correlation of aircraft types and cargoes; to permit loads to be pre-prepared; to allow aircraft to be loaded, trimmed and lashed down by semi-skilled personnel; and commodities in mixed cargoes to be blended to avoid premature weighting or bulking out of aircraft.²¹

SOPs ensured everyone did their job the same way. This was reflected in AATO 'fixed drills' as well as in the air. There were many maxims associated with William Tunner and the approach adopted including: 'inflexibly systematic as a metronome', 'There could be no variations, no displays of individual temperament', 'Functioned with machine-like efficiency', and 'Aircraft maintenance teams, aircrews, supply personnel, and thousands of lesser-known activities were sharply regimented. All

¹⁷ Barker, pp. 10, 37-38.

¹⁸ AP3257, pp. 301; 521; Barker, pp. 37-38; TNA, FO 1077/4, CAATO Notes on Conference 27 April 1949 and 25 May 1949.

¹⁹ AP3257, pp. 66, 175; TNA: WO 291/1056, Report No. 8/48; WO 291/1101, Report No. 28/49.

²⁰ AP3257, pp. 20-23 28-29; HQ USAFE, *Berlin Airlift: A USAFE Summary, 26 June 1948-30 September 1949* (HQ Ramstein AFB: USAFE reproduction Centre, undated, circa 1950) pp. 22-25.

²¹ AP3257, pp. 68-69; *Berlin Airlift: A USAFE Summary*, p. 29.

jobs were performed according to strict directives and tracked on statistical charts and tables.'²²

Van Creveld wrote about Operation OVERLORD that 'In the final account, it was the willingness - or lack of it - to override the plans, to improvise and take risks, that determined the outcome.'²³ The culture and the often quickly changing conditions of hot wars fostered quick thinking - "initiative" - and flexibility. The different circumstances of the Airlift allowed a measured approach where logistic systems were analysed, processes designed and then "staffed", before controlled application to achieve standard methods; essentially, it was systems engineering.

²² AFHRA: IRISNUM 1093673, Roger D. Launius and Coy F. Cross II, *MAC and The Legacy of the Berlin Airlift* (Scott AFB IL: Military Airlift Command Office of History Monograph, 1989) p. 33; Billy J. Hoppe, Lt Col, 'Lieutenant General William H. Tunner in the China-Burma-India "Hump" and Berlin Airlifts: a Case Study in Leadership in Development of Airlift Doctrine' (Air University Maxwell AFB, in fulfilment of the curriculum requirement of the Air War College, 1995) p. 17; Tunner, pp. xi, 162, 174; USAF, 'Lieutenant General William H. Tunner', *Biographies*, <www.af.mil/information/bios/bio.asp?bioID=7431> [accessed 21 December 2012] citing an excerpt from Clayton Knight's book, *Lifeline in the Sky*.

²³ Van Creveld, pp. 236.

CHRONOLOGY OF THE BERLIN BLOCKADE AND AIRLIFT

Two sources have been used primarily to build the following chronology: *AP3257* and *The Berlin Blockade*¹. Additional footnotes identify where other sources have been employed either to enhance the list or the detail about a particular occurrence.

Date	International Dimension	German Dimension	Blockade and Airlift
1948			
1 April			Soviet rail and road restrictions on traffic from western zones to Berlin resulted in a small airbridge to supply the western occupation forces in Berlin.
10 April		Clay statement: 'After Berlin will come Western Germany' ² .	

¹ Walter Phillips Davison, *The Berlin Blockade: A Study in Cold War Politics* (New York: Arno Press, 1980) pp. 387-389; HQ BAFO, *AP3257 A Report on Operation PLAINFARE (The Berlin Airlift) 25th June 1948 - 6th October 1949* (Bielefeld: Control Commission, 1950) pp. 146-149, 215-216, 528, 551-552.

² Alan Bullock, *Ernest Bevin - Foreign Secretary 1945-1951* (Oxford: Oxford University Press, 1985) p. 547.

Date	International Dimension	German Dimension	Blockade and Airlift
11 June			Rail movement between Berlin and western Germany stopped temporarily.
12 June			Road movement between Berlin and western Germany harassed because the Soviet Military Administration [SMA] closed a bridge for 'repairs'.
16 June	Col Yelisarov (Deputy Soviet Commandant of Berlin) walked out of Allied Kommandatura meeting. (Soviet Commandant, Gen Kotikov, was ill). ³		

³ Ann and John Tusa, *The Berlin Airlift* (Staplehurst: Spellmount, 1998) pp. 136-137.

Date	International Dimension	German Dimension	Blockade and Airlift
17 June	<p>European Recovery Program bill approved by Congress.</p> <p>French Assembly approved the London Agreements on the future of western Germany⁴.</p>		<p>The planning of Operation KNICKER to supply the British garrison in Berlin by air was completed.</p>
18 June		<p>Currency reform in western Germany (but not Berlin) announced.</p>	
23 June	<p>Warsaw Conference involving the Soviet Union and satellite countries.</p>	<p>SMA ordered currency reform in eastern Germany including Berlin.</p> <p>Western powers countered by currency reform in western Berlin.</p> <p>A crowd, abetted by SMA controlled police, attacked the Berlin City Assembly.</p>	

⁴ Daniel Yergin, *Shattered Peace: the origins of the cold war and the national security state* (London: Deutsch, 1978) p. 376.

Date	International Dimension	German Dimension	Blockade and Airlift
24 June		70-80,000 demonstrated at Hertha Stadium in French Sector in support of Magistrat and City Assembly ⁵ .	SMA imposed full blockade. SMA refused to supply food to western sectors of Berlin ⁶ .
25 June			First Douglas Dakotas arrived at RAF Wunstorf. 6½ tons hauled. ⁷
26 June			"Official" start of Berlin Airlift and the start of US Operation VITTLES. ⁸

⁵ Davison, pp. 100-101; Tusas, p. 142.

⁶ Davison, p. 99; TNA, AIR 8/2611, AHQ BAFO signal AOX 709 24 June 1948 requested initiation of Operation 'KNICKER' 'on a limited scale'.

⁷ AP3257, pp. 117, 129.

⁸ HQ USAFE, *Berlin Airlift: A USAFE Summary, 26 June 1948-30 September 1949* (HQ Ramstein AFB: USAFE reproduction Centre, undated, circa 1950) p. 185; Davison, p. 388; Daniel L. Haulman, *The United States Air Force and Humanitarian Airlift Operations 1947-1994*, Air Force History and Museums Program (Washington DC: AFHRA, 1998) p. 234; Roger G. Miller, *To Save a City: The Berlin Airlift, 1948-1949* (College Station, TX: Texas A&M University Press, 2000) p. 39.

According to Elizabeth S. Lay, Historical Division, Headquarters European Command, 'The Berlin Airlift: Part 1: 21 June-31 December 1948', *Occupation Forces in Europe Series 1948 -1949*, (Karlsruhe: 1952) pp. 1 and 10-11, US Transportation Corps records indicated that the 82 tons lifted on that date was military cargo and the first civilian cargo received at Tempelhof was 223 tons on 28 June.

Date	International Dimension	German Dimension	Blockade and Airlift
27 June			Group Captain N. C. Hyde became officer commanding RAF Transport Force ⁹ .
28 June	<p>Truman's statement: 'We are going to stay. Period'¹⁰</p> <p>Bevin's retort to Draper '[1500 tons per day] was not enough and he was sure the USA could do better'¹¹.</p>		<p>Operation KNICKER started; 44 tons delivered to RAF Gatow from RAF Wunstorf.</p> <p>HQ Army Air Transport Organisation [HQ AATO] formed.</p>

⁹ *AP3257*, pp. 7-9, 117-128.

¹⁰ Bullock, p. 577; Harry S. Truman Library and Museum, Independence MO, 'The Berlin Crisis, Research Project No. 17, Rough Draft, Department of State, 1948 [continues to 23 May 1949], President's Secretary's Files, Truman Papers' <www.trumanlibrary.org/whistlestop/study_collections/berlin_airlift/large/documents/index.php?> [accessed 6 July 2011].

¹¹ Bullock, pp. 576-577. William H. Draper, [US] Under Secretary for the Army.

Date	International Dimension	German Dimension	Blockade and Airlift
29 June			<p>Operation widened in scope to include western Berlin's civil population. Renamed CARTER PATERSON¹².</p> <p>Brig Gen Joseph Smith, base commander Wiesbaden, appointed in temporary charge of [American] Berlin Airlift Task Force¹³.</p>
30 June	<p>Bevin in House of Commons: 'HM Government and our Western Allies can see no alternative between that and surrender, and none of us can accept surrender'¹⁴.</p>		

¹² HQ No. 46 Gp. Diary of Events gave date for renaming as 30th - AP3257, p. 146.

¹³ *Berlin Airlift: A USAFE Summary*, p. 186; Lay, 'The Berlin Airlift: Part 1', p. 13 and Miller, pp. 57-58. Tunner records Smith knew of his appointment on 27th - William H. Tunner, *Over the Hump* (Washington DC, US Government, 1985) p. 159.

¹⁴ Bullock, p. 578.

Date	International Dimension	German Dimension	Blockade and Airlift
1 July.	Col Kalinin (Soviet Chief of Staff at Kommandatura) terminated quadrilateral Kommandatura.		Avro Yorks arrive at RAF Wunstorf. Douglas C-54s arrived at Rhein-Main AFB ¹⁵
3 July			Operation renamed PLAINFARE; (HQ No. 46 Gp. Diary of Events gave date for renaming as 19 th). First York sortie into RAF Gatow.
5 July	The National Health Service introduced in Great Britain ¹⁶ .		First [four-engine flying boat] Short Sunderland sortie from Finkenwerder to the Lake Havel.

¹⁵ *Berlin Airlift: A USAFE Summary*, p. 186; clarified by Miller, p. 58.

¹⁶ Hansard, 'National Health Service', HC Deb 09 February 1948 Vol. 447 cc35-160.

Date	International Dimension	German Dimension	Blockade and Airlift
10 July			HQ AATO moved to Schloss Buckeburg with its Rear Airfield Support Organization and Forward Airfield Support Organization elements at RAF Wunstorf and RAF Gatow respectively.
16 July	America deployed B-29 bombers to British bases.		Concrete runway completed at RAF Gatow.
19 July		Soviet offer to supply food to all of Berlin.	Hyde ceased to be OC RAF Transport Force; period of confused command, control and coordination followed until the arrival at RAF Buckeburg of the Advanced Operational HQ No. 46 Group ¹⁷ . RAF Dakotas transferred from RAF Wunstorf to RAF Fassberg.

¹⁷ AP3257, pp. 7-9, 117-128.

Date	International Dimension	German Dimension	Blockade and Airlift
24 July	Bevin: 'the abandonment of Berlin would mean the loss of Western Europe' ¹⁸ .		
25 July		Details of the Soviet food offer announced ¹⁹ .	
26 July		Start of split of Berlin police into western and Eastern Zone forces ²⁰ .	
27 July			Flight Refuelling flew first British Civil Airlift sortie from RAF Buckeburg to RAF Gatow.

¹⁸ Douglas to Washington quoted by Bullock, p. 588.

¹⁹ Davison, *The Berlin Blockade*, p. 165.

²⁰ Davison, *The Berlin Blockade*, pp. 171-174.

Date	International Dimension	German Dimension	Blockade and Airlift
29 July			[American] Airlift Task Force (Provisional) established ²¹ .
30 July			Letter appointing Major General William Tunner as Commander of the Airlift Task Force (Provisional) issued by HQ USAFE ²² .
2 August	Representatives of the three western powers met with Molotov and Stalin in Moscow. Meetings continued throughout August.		
4 August			British Civil Airlift officially began with aircraft based at RAF Wunstorf, RAF Fassberg and Finkenwerder.

²¹ *Berlin Airlift: A USAFE Summary*, p. 4.

²² Lay, 'The Berlin Airlift: Part 1', pp. 13 and 58.

Date	International Dimension	German Dimension	Blockade and Airlift
17 August			Highest daily tonnage by RAF of the whole Airlift, 1,735.6 short tons.
20 August			RAF Dakotas started move from RAF Fassberg to RAF Lubeck.
21 August			USAF C-54s deployed to RAF Fassberg, operating into RAF Gatow.
26 August		Soviet supporters marched on the Berlin Stadthaus after which 30,000 pro-democracy supporters demonstrated at the Reichstag ²³ .	
27 August		Mob of 500-800 attacked the Stadthaus helped by SMA-controlled police ²⁴ .	

²³ Davison, pp. 179-180.

²⁴ Davison, pp. 180-181.

Date	International Dimension	German Dimension	Blockade and Airlift
28 August.		Civil Airlift aircraft at RAF Fassberg moved to RAF Lubeck	
30 August	Moscow Agreement published.		
6 September		Stadthaus attacked again ²⁵ .	
1-7 September	Four military governors met in an unsuccessful attempt to implement Moscow Agreement.		
9 September		Estimated 250,000 held a pro-democracy demonstration outside the Reichstag ²⁶ .	
		The majority of the non-Socialist Unity Party of Germany Assembly members transferred to the British Sector ²⁷ .	

²⁵ Davison, pp. 185-187.

²⁶ Tusas, pp. 222-231.

Date	International Dimension	German Dimension	Blockade and Airlift
15 September			RAAF aircrews joined RAF Lubeck.
18 September			USAF Air Force Day celebrated by delivery of 6,988.7 short tons ²⁸ .
22 September			No. 46 Group formed Advanced Operational HQ at RAF Buckeburg; Air Commodore John W. F. Merer, AOC No 46 Group, positioned in Germany.
29 September	Western powers referred dispute to the UN ²⁹ .		
1 October			All USAF [twin-engine] Douglas C-47s withdrawn from Airlift ³⁰ .

²⁷ Bullock, p. 593.

²⁸ Miller, pp. 161-162.

²⁹ Davison, p. 241.

³⁰ *Berlin Airlift: A USAFE Summary*, p. 186.

Date	International Dimension	German Dimension	Blockade and Airlift
4-5 October	5 October UN Security Council agreed to place examination of Berlin dispute on its Agenda ³¹ .		
5 October			RAF Lubeck based British Civil Airlift twin-engine aircraft moved to Fuhlsbuttel.
15 October			CALTF formed under Major General Tunner with Air Commodore Merer as Deputy Commander ³² . SAAF aircrews join RAF Lubeck.

³¹ Davison, pp. 242-243.

³² TNA, AIR 2/10063, Es:166-168 CALTF Directive.

Date	International Dimension	German Dimension	Blockade and Airlift
16 October			Lieutenant General John K. Cannon replaced Curtis E. LeMay as CG USAFE. ³³
20 October	Western German Parliamentary Council met to draft a constitution for West Germany.		
25 October	Security Council's draft resolution for settling Berlin dispute vetoed by USSR.		
26 October			RNZAF aircrews arrived at RAF Lubeck.
30 October			Air Marshal T. M. Williams replaced Air Marshal Sir Arthur Sanders as AOC-in-C BAFO.

³³ Daniel F. Harrington, *The Air Force Can Deliver Anything: A History of the Berlin Airlift* (Ramstein AFB: USAFE History Office, 1998) p. 67; Tunner, *Hump*, pp. 188-189.

Date	International Dimension	German Dimension	Blockade and Airlift
1 November	Truman re-elected President of the USA ³⁴ .	"Average" ration for Berliner in American and British Sectors rose by 12.3% to 1,998 calories ³⁵	
4 November			[American] 1 st Airlift Task Force established within CALTF ³⁶ .
8 November			First USN transport squadron (ex-MATS) arrived at Rhein-Main AFB ³⁷ .
11 November			First Handley Page Hastings sortie from RAF Schleswigland.
18 November			RAF Dakota landed at Tegel.

³⁴ Bullock, p. 633.

³⁵ Davison, pp. 313-314.

³⁶ *Berlin Airlift: A USAFE Summary*, p. 4.

³⁷ *Berlin Airlift: A USAFE Summary*, p. 186; Miller, pp. 164-165 gave the date as 9 November.

Date	International Dimension	German Dimension	Blockade and Airlift
25 November			Part of British Civil Airlift's four-engine fleet relocated to RAF Schleswigland.
26 November			All Civil Airlift Dakotas and Vikings withdrawn ³⁸ .
30 November	Security Council established a Technical Committee (of neutrals) to study Berlin currency problem.	New government established in Soviet Sector of Berlin, 'Staatsoper' Magistrat ³⁹ .	
1 December			Tegel formally opened.

³⁸ *AP3257*, p. 243.

³⁹ Tusas, pp. 293-294.

Date	International Dimension	German Dimension	Blockade and Airlift
5 December		Elections in the western sectors. 86.2% turnout; 64.85% for SPD, 19.4% for Christian Democratic Union. Ernst Reuter became Oberbürgermeister of the western sectors. Magistrat and Assembly based in the Rathaus Schöneberg. ⁴⁰	
15 December			RAF Celle opened as a USAF C-54 base. Flying-boats withdrawn from Airlift.
Christmas			Bob Hope's road show for the Airlift. ⁴¹
31 December			100,000 th Airlift sortie into Berlin.

⁴⁰ Tusas, pp. 294-295, 299. Bullock, p. 635 cited the slightly different figures. Davison p. 229 gave: 83.9% for one of the four democratic parties, 2.4% invalid votes and 13.7% did not vote.

⁴¹ Morale booster once reorganized so that some Airlift personnel were able to attend. Its real benefit logistically was that Hope was accompanied by W. Stuart Symington, Secretary of the Air Force, who saw and subsequently had corrected rapidly some of the problems CALTF experienced because of its unsatisfactory reporting chain through USAFE - John Provan and R. E. G. Davies, *Berlin Airlift: The Effort and the Aircraft* (McLean VA: Paladwr Press, 1998) p. 64; Tunner, pp. 194-197.

Date	International Dimension	German Dimension	Blockade and Airlift
1949			
3 January	UN Technical Committee submitted its currency report to the four Powers.		
19 January			¾ millionth ton delivered.
31 January	Stalin stated his conditions for ending blockade without reference to currency problem.		171,960 short tons delivered by CALTF during January including 5,320 short tons by the Wet Lift.
[By end of] January .			225 Skymasters in Germany and a total of 319 assigned to the Airlift ⁴² .
4 February	Western powers reported that Technical Committee's draft proposal was not feasible unless Berlin is reunified.		The Western Powers tightened the counter-blockade.

⁴² AP3257, p. 284; Miller, p. 163.

Date	International Dimension	German Dimension	Blockade and Airlift
11 February	UN Security Council informed that further work by the Committee of Neutrals to resolve the Berlin issues would not seem currently to be of use ⁴³ .		
12 February			With withdrawal of last Bristol freighter, the Civil Airlift now operated only four-engine aircraft.
15 February	Start of informal Jessup-Malik talks on Berlin dispute.		
18 February			Millionth ton delivered.
28 February			In February CALTF delivered 152,218.9 short tons ⁴⁴ including 7,355 short tons by the Wet Lift.

⁴³ Davison, pp. 248-249.

⁴⁴ *AP3257*, p. 519.

Date	International Dimension	German Dimension	Blockade and Airlift
4-6 March			Clement R. Attlee visited Airlift ⁴⁵
11 March			The 50,000 th passenger flown out of Berlin.
15 March			HQ No. 46 Group moved from RAF Buckeburg to RAF Luneburg.

⁴⁵ Anon, 'Attlee Praises Team Effort', *The Task Force Times*, 14 March 1949; 'Our political correspondent', 'Mr Attlee in Berlin', *Manchester Guardian*, 5 March 1949. Anecdotal story cited by Tunner, *Hump*, pp. 201-202 is that Attlee arrived in a C-54 because the crosswinds at RAF Gatow were too great for a British aircraft. Assuming this is the Attlee official visit cited in TNA: AIR 20/6892, Rainsford February 1949 and AIR 28/1034, the RAF Gatow ORB stated he arrived and left in an Avro York, aircraft serial number MW100.

Date	International Dimension	German Dimension	Blockade and Airlift
19 March		The East German Volksrat approved the draft constitution for East German Government. Approved by the Volkskongress in May 1949 but Soviet permission to proceed to a German Democratic Republic was not issued until 3 October 1949 after which the [unelected] provisional government was formed. ⁴⁶	
20 March		Western powers announced that west mark would be the legal tender in western Berlin.	
31 March			In March 196,160 short tons were hauled by CALTF, including 10,782 short tons by the Wet Lift.

⁴⁶ Bullock, p. 698.

Date	International Dimension	German Dimension	Blockade and Airlift
1 April			No 46 Group transferred from Transport Command to BAFO. Civil Airlift Division (BEA) formed.
4 April	North Atlantic Treaty signed ⁴⁷ .		
6 April			United States Army Airlift Support Command formed ⁴⁸ .
12-19 April			Berlin garrison rotation, 1 st Norfolks by Royal Welch Fusiliers ⁴⁹ .

⁴⁷ By Belgium, Britain, Canada, Denmark, France, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, and USA - Davison, p. 268.

⁴⁸ Elizabeth S. Lay, Historical Division, Headquarters European Command, 'The Berlin Airlift: Part 2: 1 January-30 September 1949', *Occupation Forces in Europe Series 1948 -1949*, (Karlsruhe: 1952) pp. 4, 15.

⁴⁹ AP3257, p. 526.

Date	International Dimension	German Dimension	Blockade and Airlift
16 April			'Easter Parade', highest ever Airlift day when 12,940 tons were hauled to Berlin ⁵⁰ .
30 April			In April 25 more C-54s assigned to the Airlift maintenance pool ⁵¹ .
			232,267 short tons delivered by CALTF during April, 10,782 short tons by the Wet Lift.
1 May 1949			The Civil Airlift Division (BEA) relocated to RAF Luneburg.
4 May	Four Powers announced agreement to end blockade.		

⁵⁰ Date is usually given as 16 April 1949 owing to statistical recording procedures but it started at 1200 hours on 15 April and ran for 24 hours - TNA, AIR 25/1273, No. 46 Gp. ORB Appendices, App. 85, Milton 11 April 1949.

⁵¹ Miller, p. 163.

Date	International Dimension	German Dimension	Blockade and Airlift
8 May		The Western German Parliamentary Council passed the Federal Republic of Germany constitution ⁵² .	
11 May			In the evening supply of electricity from the Eastern Zone restarted ⁵³ .
12 May	Three western Military Governors and Konrad H. J. Adenauer attended the meeting of [western sectors] City Assembly. 200,000 gathered outside Schöneberg to hear Adenauer, Reuter and Carlo Schmid; former pledged western Germany's links with Berlin ⁵⁴		Blockade ended at 0001 hrs. Airlift continued ⁵⁵ .

⁵² Bullock, pp. 690-691.

⁵³ Tusas, p. 355.

⁵⁴ Tusas, p. 359.

⁵⁵ TNA, AIR 2/10064, Es:188-189 BAFO AX654 7 May 1949.

Date	International Dimension	German Dimension	Blockade and Airlift
12-17 May.			Rotation of 1 st Worcesters by 1 st Gordon Highlanders ⁵⁶
13 May		The American, British and French Military Governors approved the Federal Republic of Germany constitution ⁵⁷ .	
20 May		Berlin railway strike began ⁵⁸ .	
22 May			Highest daily tonnage by British Civil Airlift at 1,009.6 short tons.

⁵⁶ *AP3257*, p. 526.

⁵⁷ Bullock, pp. 690-691.

⁵⁸ TNA, AIR 2/10064, E146 FO (German Section) No. 2516 25 June 1949; Tusas, p. 362.

Date	International Dimension	German Dimension	Blockade and Airlift
23 May		Promulgation of Federal Republic of Germany constitution. Elections to Bundestag held on 14 August 1949 with first Chancellor, Adenauer, elected on 15 September 1949 ⁵⁹ .	
23 May-20 June	Council of Foreign Ministers met but achieved nothing of significance with regard to Berlin or access to it ⁶⁰ .		
31 May			CALTF's total for May 250,818 short tons with 12,642.3 short tons being by the Wet Lift.
1 June			100,000th short ton of liquid fuel delivered by the British Civil Airlift.

⁵⁹ Bullock, p. 698.

⁶⁰ Tusas, pp. 354, 365-372.

Date	International Dimension	German Dimension	Blockade and Airlift
30 June			In June the wet lift hauled 17,908.3 short tons. ⁶¹ .
2 July			2,000,000 th short ton delivered.
5 July			Highest daily tonnage by combined RAF and Civil airlifts at 2,314.5 short tons.
12 July			Run-down of British Civil Airlift begins ⁶² .
18 July			Cabinet approved proposals for discontinuing the Airlift ⁶³

⁶¹ TNA, AIR 2/10064, E.52 BAFO AX684 20 June 1949, E.144 BAFO AX691 30 June 1949.

⁶² TNA, AIR 2/10064, E.146 FO 2516 Basic 25 June 1949, Es:149-150 BAFO AOX 33 27 June 1949, Es:147-147A James 29 June 1949, E.148 James 29 June 1949, E.145 Berlin 2169 Basic 28 June 1949, E.144 BAFO AX691 30 June 1949, E.140 BAFO AX694 1 July 1949.

⁶³ TNA, AIR 2/10064, E.124 Hughes 19 July 1949 - CP 49 154.

Date	International Dimension	German Dimension	Blockade and Airlift
29 July			Rhein/Main AFB became sole consignor for coal ⁶⁴ .
1 August			Run-down of military Airlift begins. C-54s left RAF Celle.
15-16 August			Civil Airlift ended. Operations from Fuhlsbittel ceased.
29 August	First atomic test by USSR ⁶⁵ .		Operations from RAF Wunstorf ceased.
1 September			HQ CALTF disbanded. C-54s left RAF Fassberg. Operations into Tegel ended.
18 September	Devaluation of sterling announced ⁶⁶ .		

⁶⁴ *Berlin Airlift: A USAFE Summary*, p. 189.

⁶⁵ Donald P. Steury, CIA History Staff, *How the CIA Missed Stalin's Bomb: Dissecting Soviet Analysis, 1946-50* <www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/csi-studies/studies/vol49no1/html_files/stalins_bomb_3.html>, posted 15 Apr 2007> [accessed 7 June 2012].

Date	International Dimension	German Dimension	Blockade and Airlift
21 September		Military government ended in western Germany (the Federal Republic of Germany) ⁶⁷ .	
23 September			Operations from RAF Lubeck ceased.
30 September 1949,			Last C-54 Operation VITTLES delivery. ⁶⁸ 1st Airlift Task Force stopped regular Airlift flights ⁶⁹ .
6 October			Operations from RAF Schleswigland ceased with departure of last Hastings.
15 October			No. 46 Group returned to TC.

⁶⁶ Peter Hennessy, *Never Again Britain 1945-1951* (London: Penguin, 2006) p. 464.

⁶⁷ Hennessy, *Never Again*, p. 464.

⁶⁸ *Berlin Airlift: A USAFE Summary*, p. 189.

⁶⁹ Lay, 'The Berlin Airlift: Part 2', p. 108.

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HALF A MILLION TONS AND A GOAT:
A STUDY OF BRITISH PARTICIPATION IN THE BERLIN AIRLIFT

25 JUNE 1948 - 12 MAY 1949

ADDENDUM: CALCULATION FORMULAE

Richard David Keen

Addendum in support of thesis submitted for the degree of Doctor of Philosophy to
the School of Humanities in the University of Buckingham

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CALCULATION FORMULAE

INTRODUCTION

The thesis contains figures calculated from primary or contemporaneous data. In most cases the calculations are simple and the source material evident. There are a few instances, however, where readers may wish to understand more complex formulae and these are set out below correlated with the relevant page or pages in the parent thesis. A separate addendum has been employed to avoid distracting the flow for people who do not seek this detail.

CHAPTER 3: STALINGRAD

Page 100, Issues with Morzik's figures:

$$750 \text{ tons} \div (2 \text{ tons/aircraft per delivery} * ((30 \div 100) \text{ OR } (35 \div 100) \text{ serviceability})) = 1250 \text{ or } 1071[\text{rounded}].$$

Page 101, using 300 tons per day target:

$$300 \text{ tons} \div (2 \text{ tons/aircraft per delivery} * ((30 \div 100) \text{ OR } (35 \div 100) \text{ serviceability})) = 500 \text{ or } 429[\text{rounded}].$$

Page 101, Approximate time for Salsk to Pocket to Salsk by Ju-52:

$$((350 * 2 \text{ kms}) \div 190 \text{ kms/hour} [\text{cruising speed } 211 \text{ kms/hour; climb rate } 3000 \text{ metres in } 17 \text{ minutes, rounded}]) = 221 \text{ minutes (+ 4 hours ground time in Pocket)}.$$

Page 102, hypothetical number of aircraft:

$$750 \text{ tons} \div ((2 \text{ tons} * 2 \text{ trips}) * ((35 \div 100 \text{ serviceability}) \text{ OR } (25 \div 100 \text{ serviceability})) * (70 \div 100 \text{ to allow for aborted deliveries})) = 765 \text{ or } 1071 [\text{rounded}].$$

CHAPTER 6: BERLIN AIRLIFT

Pages 215-216, Estimate of trips per Skymaster hauling liquid fuel in bulk:

Daily target for May 1949:	553 short tons		
	Diesel	Gasoline	Kerosene
Tudor capability:	8.9 short tons	8.7 short tons	8.9 short tons
Product split based on May 1949's actuals:	0.754	0.146	0.100
Tonnage/sortie * product split:	8.9*0.754	8.7*0.146	8.9*0.100
Overall average:	8.87		
Number of Skymaster trips/day:	$550 \div 8.87 = 62$		
Number of assigned Skymasters:	$62 \div 3.5 = 18$ [rounded]		

Page 216, total Skymasters needed to replace the British:

Assigned aircraft	Pipeline and Overhaul	At Great Falls AFB	Total [rounded]
@ extra 38	$(92/201)*38 = 17.39$	$(19/201)*38 = 3.59$	59
@ extra 56	$(92/201)*56 = 25.63$	$(19/201)*56 = 5.29$	87
@ extra 69	$(92/201)*69 = 31.58$	$(19/201)*69 = 6.52$	108

Page 221, C-54s not involved with Airlift:

(441 in inventory - 40 leased) - (201 in 1st ALTF + 92 in maintenance and inspection pipeline + 19 at Great Falls) = 89

Page 222, R5D potential 1st ALTF reinforcements:

132 on inventory - (24 in 1st ALTF + 8 in training [including 7 in VR-44] + 15 in VR-3 + 10 on special missions + 8 USN Airlift maintenance and inspection pipeline) = 67.

Page 223, Anderson Fleet:

$$441 \text{ C-54s} + 132 \text{ R5Ds} = 573.$$

Page 223, directly and indirectly involved with Airlift:

$$(201 \text{ C-54s} + 24 \text{ R5Ds in 1}^{\text{st}} \text{ ALTF}) + (8 \text{ R5Ds} + 92 \text{ C-54s in maintenance pipeline}) + 19 \text{ at Great Falls} + 7 \text{ in VR-44} + 15 \text{ in VR-3} = 366.$$

Page 244, estimate of American increase in May 1949 if relocated to Northern Zone:

	May 1949			Per day		Per assigned aircraft per day		
AFB	Tons	Trips	Average assigned aircraft	Tons	Trips	Tons	Trips	Tons per trip
Fassberg	50871	5133	47.33	1641	165.581	34.671	3.498	9.911
Celle	42935	4374	39.94	1385	141.097	34.677	3.533	9.816
subtotal NZ	93806	9507	87.27	3026	306.677	34.674	3.514	9.867
Rhein	77995	7732	87.15	2515.968	249.419	28.869	2.862	10.087
Wiesbaden	20460	2127	26.49	660	68.613	24.915	2.590	9.619
subtotal SZ	98455	9859	113.64	3175.968	318.032	27.948	2.799	9.978

Either:

(Estimated daily total tonnage for SZ average assigned aircraft of 113.64 Skymasters operating at NZ average trips per day of 3.514 and SZ tons per trip of 9.978 [includes R5Ds]) - (daily total tonnage for SZ of 3175.968) = 809.

Or

(Estimated daily total tonnage for SZ average assigned aircraft of 113.64 Skymasters operating at NZ average trips per day of 3.514 and NZ tons per trip of 9.867) - (daily total tonnage for SZ of 3175.968) = 764.

Page 262, extra Skymasters needed to replace RAF and British dry lift following relocation of all of 1st ALTF to Northern Zone:

Extra Skymasters needed to be operating with squadrons in Northern Zone clutch around RAF Fassberg in May 1949: daily British haul of 1,889 short tons - Wet Lift 578 tons - 1st ALTF gain of 809 tons = 502 short tons \div 35 tons per Skymaster per day + 4 Skymasters as allowance for niche tasks other than Wet Lift = 19 Skymasters (rounded).

Page 262, total extra Skymasters to replace RAF and British dry lift following relocation:

19 + allowance for Pipeline and Overhaul pool and Great Falls AFB training facility = $19 * (111 \div 201) = 29$ Skymasters (rounded) in total.