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**THE SILENT REVOLUTION WITHIN NATO
LOGISTICS: A STUDY IN AFGHANISTAN FUEL AND
FUTURE APPLICATIONS**

by

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December 2012

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AFGHANISTAN FUEL AND FUTURE APPLICATIONS**

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ABSTRACT

This thesis captures a history of the North Atlantic Treaty Organization (NATO) logistics fuel operation in Afghanistan and considers its lessons for the broader logistics community. The research focuses on a small group of individuals and how they came to supply over three million liters of fuel daily to Afghanistan with very little upfront investment from the International Security Assistance Force (ISAF) nations. The thesis describes how these individuals managed NATO fuel operations outside of traditional agencies like the NATO Support Agency (NSPA) and the worldwide U.S. Defense Logistics Agency (DLA) Energy. In addition, this thesis examines NATO's operation in Afghanistan as compared to similar historical examples of large-scale coalition fuel efforts over long lines of communication. These historical case studies assist in framing the context of NATO logisticians' accomplishments and the level of risk they accepted in supplying fuel to the NATO-led ISAF mission. Finally, the NATO case study provides a model for coalition support in a time when nations are unwilling or unable to provide logistic support to their forces.

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LIST OF ACRONYMS AND ABBREVIATIONS

AOR	area of operation
ATN	Afghan Transportation Network
BOA	basic ordering agreement
COMIJC	Commander IJC
COMISAF	Commander ISAF
COR	contracting officer representative
COTR	contracting officer technical representatives
DCAA	Defense Contracting Audit Agency
DCMA	Defense Contract Management Agency
DLA	Defense Logistics Agency
DoD	U.S. Department of Defense
FAR	Federal Acquisition Regulation
FBCF	fully burdened cost of fuel
FOB	Forward Operating Base
GIRoA	Islamic Republic of Afghanistan
ID/IQ	indefinite delivery/indefinite quantity
IJC	HQ ISAF Joint Command
ISAF	International Security Assistance Force
JSC-A	U.S. Joint Sustainment Command–Afghanistan
JFC HQ	Allied Joint Force Command Headquarters
JLSG	Joint Logistics Support Group
JPO	Joint Petroleum Office
LOC	line of communication
LOGCAP	Logistics Civil Augmentation Program
MTA	Military Technical Agreement
NAC	North Atlantic Council
NATO	North Atlantic Treaty Organization
NCS	Nordic Camp Supply
NRF	NATO Response Force
NSPA	NATO Support Agency
PAW	Petroleum Administration for War
P&C	Purchasing and Contracting
PPL	price per liter
RC	Regional Command
SAPO	Sub-Area Petroleum Office
SHAEF	Supreme Headquarters Allied Expeditionary Forces
TCN	troop contributing nations
USCENTCOM	U.S. Central Command
UK	United Kingdom
UN	United Nations
U.S.	United States of America

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I. INTRODUCTION

A. THE BEGINNING

On 1 February 2006, personnel from the North Atlantic Treaty Organization (NATO) published the first of three contract statements of work (SOW) for bids to commercial companies to meet the International Security Assistance Force (ISAF) fuel requirements at three key NATO aerial ports of debarkation (APOD): Herat Airfield, Kabul Afghanistan International Airport (KAIA), and Kandahar Airfield (KAF). As exemplified by the Herat SOW, they were straightforward and elegantly simple:

The general requirement of this service is to meet the fuel, oil and lubricant needs of International Security Assistance Force (ISAF) forces located in the Herat Area of Operation (AO), Afghanistan. The Herat AO encompasses the provinces of Hirat, Badghis, Ghor and Farah. In addition, ISAF requires an alternate supplier and alternate route of transit into the country than the current means through Pakistan. This will allow operational flexibility in case of supply or transport difficulties between Afghanistan and Pakistan.¹

Whether by chance or foresight, this simple and elegant requirement initiated a series of highly flexible and responsive commercial agreements. Three basic ordering agreements (BOA) were written to provide commercial contracted fuel support to the NATO ISAF APODs where ISAF nations could not or would not provide fuel support. Together the BOAs are commonly known as the NATO fuel BOA or the BOA.

B. STATEMENT OF PURPOSE AND SCOPE

The purpose of this thesis is to capture the history of the NATO logistics operation to supply fuel to ISAF, to tell the story of the NATO fuel BOA, to understand the context of the NATO ISAF fuel case study as compared to similar historical examples of large-scale multinational fuel efforts, and to provide a model of logistic fuel support for future multinational and U.S. operations. Drawing on the history of multinational fuel

1. Joint Force Command Headquarters Brunssum, "Statement of Work (SOW) for the Provision of Aviation & Ground Fuels for NATO ISAF Herat, Afghanistan," February 1, 2006, 1.

operations from World War II (WWII) through Operation Enduring Freedom (OEF) assists in framing the NATO ISAF case study.

The scope of the research focuses on a small group of individuals and how they supplied over three million liters of fuel daily to Afghanistan with very little upfront investment from ISAF nations. The thesis will describe what led NATO decision makers to implement such an innovative model as the BOA, and how these individuals managed NATO fuel operations in a manner different from traditional NATO or U.S. agencies. The decisions that were made by the NATO logisticians in supplying fuel to ISAF in a risky environment were practical and innovative, yet uncelebrated. Finally, the NATO ISAF fuel case study will serve as a model of success in multinational support operations that will benefit the entire logistics community, and may provide solutions to improve future U.S. fuel operations.

C. METHODOLOGY AND OVERVIEW

This thesis will use historical analysis of large fuel logistics case studies in military operations in order to understand the context and scale of NATO ISAF fuel operations. With a solid historical frame, this thesis will compare and analyze defense contracting organizations and the various types of contracts that they normally develop in order to support military operations. This analysis will provide the background from which to identify and better appreciate the unique aspects of the NATO fuel BOA. Together, the two approaches will provide a deeper level of understanding of the supply chain management of large fuel operations and the risks associated with contracting out portions of the fuel supply chain. A history of multinational fuel support operations will add perspective to the current situation of NATO fuel operations. The thesis includes the following chapters.

1. Chapter II: The NATO ISAF Fuel Team History

The first portion of Chapter II describes NATO's post-Cold War transformation that saw reduced NATO force structures and increased obligations to new missions. These changes had significant impact on NATO and national logistics communities. Chapter II also details NATO's move to a new expeditionary posture as it took command

of ISAF in Afghanistan, and the efforts of senior NATO logisticians to support a new expeditionary force and meet Alliance transformation requirements. During this difficult period in NATO logistics history, a small team of logisticians implemented a unique solution to collective fuel support operations. The last portion of Chapter II describes their innovative product, the NATO fuel BOA, and the role of the NATO ISAF fuel team at Allied Joint Force Command Headquarters (JFC HQ) Brunssum in ISAF and Alliance logistics history.

2. Chapter III: Big Logistics

In order to frame the accomplishments of the NATO ISAF fuel team, Chapter III explains the evolution of multinational fuel support operations in modern history. The NATO ISAF fuel case study will be framed in the context of similar large-scale historical fuel operations. Three historical cases share much in common with the NATO ISAF fuel operation: World War II; U.S. Defense Logistics Agency (DLA) Energy worldwide operations; and U.S. DLA Energy Afghanistan operations. The operations were similar in size and scale, the lines of communication were lengthy and dangerous to navigate, and the organizations exercised varying levels of control over the fuel supply chain. Comparing these historical case studies and organizations will reveal key aspects for future application in operations, such as control of the fuel supply chain and analyzing the risk associated with contracting out various portions of that supply chain. The history of multinational fuel operations will provide the necessary background one will need to understand the environment in which the NATO ISAF fuel team operated, and their innovative approach to supporting ISAF operations.

3. Chapter IV: Contract Fuel

Because of the increasing reliance on contractors on the battlefield, Chapter IV examines the NATO ISAF fuel operation from a contracting perspective. We compare the technical aspects of the NATO fuel BOAs to U.S. contracts. Unique organizational entities manage these agreements and contracts, and their customer's requirements determine the nature by which such instruments are developed and executed. This comparative method reveals two distinct approaches to contracting fuel operations in

ISAF. The NATO fuel BOAs represent a type of single, integrated instrument where all costs are inclusive to the agreements, while the U.S. DLA Energy contracts illustrate a multilayered system of management and oversight for fuel support operations. Chapter IV also compares the NATO fuel BOA and DLA Energy contracts to another significant contracting model, the U.S. Army's Logistics Civil Augmentation Program (LOGCAP). A better understanding of these agreements/contracts and the different approaches used by various ISAF organizations allows for a more thorough analysis of the risks associated with supply chain management and contracted logistics.

4. Chapter V: Risk Analysis

Chapter V conducts a risk assessment of the various instruments used by the organizations that supported multinational fuel operations. With NATO support to ISAF as a case study, we discuss the advantages and drawbacks of the NATO fuel BOA against other contract types. NATO decision makers weighed the advantages of various instruments against resources, constraints, and two specific types of risk, political and financial, when determining the optimal solution in providing fuel to ISAF. Chapter V highlights the impact of decisions made by top-level decision makers, as well as by the JFC HQ Brunssum fuel staff in light of these risks, and provides insight on their decisions from personal interviews with NATO ISAF fuel team members and documents related to decisions made by national leadership. Chapter V also discusses the factors that influenced the U.S. decision to provide unilateral fuel support, and then to later take advantage of the NATO fuel BOA. Finally, the chapter closes by identifying the core risks and benefits that the NATO fuel BOA and the U.S. DoD fuel operation in ISAF have created.

5. Chapter VI: Conclusion

The thesis concludes with a discussion of the applicability of using the BOA for future multinational operations. The NATO ISAF fuel case study represents an example of how necessity in an extremely resource-constrained environment promoted innovative and effective solutions. As the number of nations that are able to support large-scale operations decline, solutions like the NATO fuel BOA represent a model for future

military logistic operations. The NATO fuel BOA has proven to be an innovative, flexible, and cost effective instrument to provide logistic fuel support during ISAF coalition operations, but can it suit the needs of future multinational campaigns? Is the BOA flexible enough to be exported to other theaters, or was it successful only within the unique operating environment of the Afghanistan? What can the U.S. DoD learn from its experience working with NATO and from its role in helping to create the BOA? As the U.S. and NATO transition out of Afghanistan in the coming years, it will be important to codify the lessons learned from NATO ISAF fuel support in order to keep this option available for consideration in future multinational operations. With this overview, this thesis begins by telling the background of NATO's involvement in ISAF and the NATO ISAF fuel team history. Chapter II discusses the history of NATO's logistics transformation in the late 20th and early 21st centuries, NATO's involvement in ISAF, and the development of the NATO fuel BOA.

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II. THE NATO ISAF FUEL TEAM HISTORY

The rapidly changing geo-political landscape of the late 20th and early 21st centuries forced important changes within NATO. From the Cold War through today's involvement in Operation Enduring Freedom (OEF), NATO leadership strived to implement doctrinal changes to improve the Alliance's collective security posture, albeit with mixed results. Resource constraints hampered the ability of member nations to implement change or to take the lead in new NATO missions. Transformation appeared to exist only on paper. After NATO assumed command of ISAF, necessity forced a small logistics team to create the change needed to support member nations and ISAF overall. This chapter focuses on the history of NATO's logistics transformation initiatives in the late 20th and early 21st centuries, NATO's involvement in ISAF, and the development of an innovative logistics solution that would allow NATO to fulfill the collective fuel requirements of ISAF.

A. BACKGROUND AND HISTORY OF NATO INVOLVEMENT IN ISAF

At the December 2001 Bonn Conference, international leaders began the process of reconstructing Afghanistan. Conference members developed the concept of a United Nations (UN) mandated international force to protect the new Afghan government, the Afghan Transitional Authority. The Bonn Agreement established a partnership between the UN, the Afghan Transitional Authority, and ISAF.² The agreement charged ISAF with providing a secure environment in and around Kabul and supporting Afghanistan's reconstruction efforts. On 11 August 2003, NATO assumed command of ISAF operations and became responsible for the provisioning of forces and the command headquarters in Afghanistan.³ In October 2003, UN Security Council Resolution 1510

2. International Conference on Afghanistan, Bonn, Germany 2001, "Agreement on Provisional Arrangements in Afghanistan Pending the Re-Establishment of Permanent Government Institutions," December 5, 2001, accessed April 3, 2012, <http://www.unhcr.org/refworld/docid/3f48f4754.html>.

3. Official ISAF History, accessed April 3, 2012, <http://www.isaf.nato.int/history.html>.

formally extended ISAF's initial mandate to cover the whole of Afghanistan.⁴ NATO's assumption of ISAF responsibilities came at a challenging time when the Alliance was still trying to overcome the difficult task of transforming its collective security following the Cold War.

With the end of the Cold War, the North Atlantic Council (NAC) announced the end of hostilities between the Warsaw Pact and NATO at the London Conference in July 1990.⁵ The end of the Cold War marked the beginning of a period of contradictions within the Alliance. NATO's governing body, the NAC, began a strategic realignment that greatly reduced NATO command and force structures as the tightly managed NATO common budgets shrank.⁶ While making personnel, materiel and fiscal cuts, the NAC simultaneously expanded the role of NATO by committing to new regional partnerships and increased mission sets. With less command and force structure available, NATO became increasingly reliant on national and multinational force solutions that faced similar force and budgetary reductions.⁷ This trend continued and accelerated as NATO's role in ISAF neared.

NATO operations in the former Yugoslavia were an early example of counterproductive trends that plagued NATO's logistics transformation. In 1995, NATO logistics staff had been reduced to the point where they were incapable of planning and managing multinational expeditionary logistics in the Balkans. NATO instead turned to U.S. logisticians who pulled together an ad hoc staff, later augmented by NATO

4. United Nations Security Council Resolution 1510, "The Situation in Afghanistan," October 13, 2003, accessed April 3, 2012, <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N03/555/55/PDF/N0355555.pdf?OpenElement>.

5. North Atlantic Treaty Organization, *London Declaration on a Transformed North Atlantic Alliance Issued by the Heads of State and Government Participating in the Meeting of the North Atlantic Council*, July 6, 1990, accessed May 1, 2012, <http://www.nato.int/docu/comm/49-95/c900706a.htm>.

6. Wing Commander UK Royal Air Force (ret.) David Orr (JFC Brunssum Operations Directorate Fuel Operations Officer) interviewed by Michael Evans, April 24, 2012, interview Orr.mp3, Evans Private Oral History Collection.

7. Thomas-Durell Young, ed., *Command in NATO After the Cold War: Alliance, National, and Multinational Considerations* (U.S. Army War College Strategic Studies Institute, June 1997): 1–2, accessed May 1, 2012, <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubid=148>.

personnel, and built and executed NATO's operational logistics plan.⁸ However, lack of support from U.S. and French senior military leadership undermined the U.S.-NATO collective logistics planning. As such, U.S. and French logistics remained separate from the NATO logistics.⁹ While NATO nominally commanded Balkan logistics operations, nations continued to operate independently, as they had during the Cold War. NATO leadership then decided that the shrinking supply of national resources might better serve the Alliance if they were pooled for the collective defense.

Alliance leadership formally recognized that traditional ideas of collective defense needed to evolve in order to face the emerging global threats that challenged the Euro-Atlantic region. On 24 April 1999, NATO heads of state and government convened at the Washington Summit and approved a new strategic concept that addressed the global nature of threats facing the Euro-Atlantic region:

Any armed attack on the territory of the Allies, from whatever direction, would be covered by Articles 5 and 6 of the Washington Treaty. However, Alliance security must also take account of the global context. Alliance security interests can be affected by other risks of a wider nature, including acts of terrorism, sabotage and organised crime, and by the disruption of the flow of vital resources.¹⁰

The 1999 Washington Summit instigated a discussion of political and military realignment within NATO that would culminate at the 2002 Prague Summit.

The Prague Summit translated NATO's new global strategic concept into tangible action by committing to additional member nations, new military capabilities, and new relationships with international partners. The Prague Declaration initiated a major transformation in which NATO further altered and reduced its command and force

8. Major General (ret.) U.S. Army William N. Farnen, "Wanted: A NATO Logistics Headquarters," *Joint Forces Quarterly* (Spring 1998): 63–65, accessed May 1, 2012, http://www.dtic.mil/doctrine/jel/jfq_pubs/1318.pdf.

9. Major General (ret.) U.S. Army William N. Farnen, "Wanted: A NATO Logistics Headquarters," *Joint Forces Quarterly* (Spring 1998): 65, accessed May 1, 2012, http://www.dtic.mil/doctrine/jel/jfq_pubs/1318.pdf.

10. North Atlantic Treaty Organization, *The Alliance's Strategic Concept approved by the Heads of State and Government participating in the meeting of the North Atlantic Council in Washington, D.C. NAC-S(99)65*, April 24, 1999, accessed April 29, 2012, http://www.nato.int/cps/en/natolive/official_texts_27433.htm?mode=pressrelease.

structures in order to create a streamlined and efficient deployable command and control organization and force structure. To provide a force capable of executing NATO's new strategic concept, the NAC approved creation of the NATO Response Force (NRF) with expectations that it would reach full operational capability no later than October 2006. The NRF would provide NATO with a fielded force that could move rapidly, as needed by the NAC, "to sustain operations over distance and time, including in an environment where they might be faced with nuclear, biological and chemical threats, and to achieve their objectives."¹¹ The transformation to a leaner, expeditionary Alliance had significant implications on NATO logistics policy and posture.

The Alliance's dramatic transformations placed a heavy burden on NATO's logistics community. Logistics had always been a critical enabler for effective NATO operations, but with NATO's new expeditionary posture it became even more important. NATO of the 1990s faced shortages in personnel, materiel and national resources, as well as the possibility of expeditionary military operations far removed from the carefully planned military-industrial infrastructure built to support and sustain NATO forces within the Alliance's boundaries. By the mid-1990s the Senior NATO Logisticians' Conference (SNLC), the senior-most body for NATO logistics, recognized these challenges and proffered the concept of cooperation and coordination between nations and NATO during planning and execution of logistics operations. The SNLC laid the foundation for a doctrine that would have NATO coordinate and prioritize logistics support for deployed NATO forces while nations would be responsible for provisioning their forces, either individually or collectively.¹²

In October 2003, the SNLC's work was formally accepted by the NATO member nations. With the approval of MC 319/2, *NATO Principles and Policies for Logistics*, NATO logistics doctrine transformed from the Cold War-era doctrine of individual

11. North Atlantic Treaty Organization, *Prague Summit Declaration Issued by the Heads of State and Government Participating in the Meeting of the North Atlantic Council in Prague on 21 November 2002*, *Press Release (2002)127*, November 21, 2002, accessed April 30, 2012, <http://www.nato.int/docu/pr/2002/p02-127e.htm>.

12. North Atlantic Treaty Organization, *NATO Logistics Handbook*, 2007, accessed May 1, 2012, <http://www.nato.int/docu/logi-en/logist97.htm>, 3.

responsibility to one where NATO nations and authorities have a collective responsibility to support multinational operations. Under MC 319/2, NATO assumed responsibility for logistics operational planning and for developing a logistics command structure capable of supporting NATO operations.¹³ Doctrinally, MC 319/2 intended to hold NATO nations responsible for sufficiently supporting their forces by using either national or cooperative logistics structures. MC 319/2, however, was sound only in principle. In reality, the SNLC had created a paper dragon that failed to make tangible improvements in multinational logistics. Because MC 319/2 allowed nations to choose to continue using their national logistics structure, NATO's logistics command and control often came into direct competition with national command and control systems. Command, even coordination, of multinational logistics required a willingness of nations to subordinate their forces to NATO. Although the NATO heads of state and government embraced collective logistics and supported its enabling role in the new expeditionary posture, issues of national sovereignty, policies and programs, competition for national forces, and reduced military budgets undermined NATO's ability to establish a sufficient command and control mechanism for logistics. These same logistics challenges hindered the development of the NRF.¹⁴

NATO leadership was under pressure to meet their stated goal of a fully mission capable NRF by October 2006. After four years of planning, training, and political rhetoric, and three years after accepting the ISAF mission, NATO leadership decided the NRF was prepared for its first full-scale test and conducted Exercise STEADFAST JAGUAR in 2006. At exercise end, NATO declared that the NRF had passed its last test and had reached full operational capability. Robert Bell, the former NATO Assistant Secretary General for Defence Investment, provided a heavy critique of this assessment in his summary of the exercise. Bell explained that NATO nations' political commitments at Prague exceeded national ability to develop their expeditionary logistics

13. North Atlantic Treaty Organization, *MC 319/2, NATO Principles and Policies for Logistics*, October 24, 2003, accessed May 1, 2012, <https://natoschool.org/system/files/NATO%20Principles%20and%20Policies%20for%20Logistics%20MC%20319-2.pdf>, 1-7-1-8.

14. Robert Bell, "Sisyphus and the NRF," *NATO Review* (Autumn 2006), <http://www.nato.int/docu/review/2006/issue3/english/art4.html>.

capabilities and the NRF was not fully mission capable. European nations had great difficulty filling NRF positions as NATO continued to expand its mission sets beyond just the NRF. Theater level logistics floundered because nations were either too small to field sufficient forces, or they decided to eschew theater-level logistics support in favor of using their own national logistics systems. As a result, the HQ Joint Logistics Support Group (JLSG) managed only a ghost support group. Bell characterized theater logistics, the JLSG, as an ad hoc mix of national logistics units that failed to provide the effective or efficient integrated logistics required by the NRF.¹⁵

Transforming to the doctrine of collective responsibility for readiness and operations was slow-going and difficult to synergize among NATO leadership and member nations. NATO leadership's wishful thinking was insufficient to bring tangible and effective improvement to the NRF or other collective expeditionary operations. As late as 2011, five years after the self-proclaimed success of STEADFAST JAGUAR, NATO had yet to solve the HQ JLSG and JLSG problems, and member nations had yet to embrace a collective NATO theater logistics command. Because of shortages in manpower, resources, national commitment, and cooperation the Alliance was finally forced to merge its HQ JLSGs units into the J4 elements of its two remaining operational headquarters, JFC HQ Brunssum and JFC HQ Naples. Even with this merger, NATO failed to address the manpower shortages of the HQ JLSG. The new structure reduced the Alliance to two HQ JLSG units and then dual-hatted the logistics positions with the J4 positions. Personnel executed responsibilities within the JFC HQ J4 while at the same time forward deployed in a HQ JLSG. The new structure had not been tested in either exercises or real-world operations. The HQ JLSG plan failed to address the lack of national contributions to the NRF JSLG that was commanded by the HQ JLSG.¹⁶

In addition, reluctance to communicate and share critical data between nations hampered the success of NATO logistics coordination, planning, and execution.

15. Robert Bell, "Sisyphus and the NRF," *NATO Review* (Autumn 2006), <http://www.nato.int/docu/review/2006/issue3/english/art4.html>.

16. Major U.S. Air Force Michael Evans, *HQ Joint Logistics Support Group (JLSG) Statement of Manpower Requirements and Finalized Job Descriptions for Merged J4 and HQ JLSG Staff* (Staff Paper Presented to Supreme Headquarters Allied Powers in Europe, April 2011).

Although some key Alliance members like the U.S. have legal limitations that restrict what data they can provide, other nations simply chose not to share their logistics data.¹⁷ During the 2009 planning process for the NATO plus-up of forces in Afghanistan, nations provided limited movement-planning data that was, effectively, post-facto data. The command and control of NATO logistics through the Alliance J4 staff structures had little ability to impact change on these national plans. NATO logistics again commanded a ghost logistics enterprise.

In the midst of their struggle to transform, the Alliance took command of ISAF in 2003. NATO's ISAF commitment was its first large-scale expeditionary operation at a time when effective NATO-led multinational logistics command structures and logistics units were immature at best. NRF was the jewel in the crown of NATO's new strategic vision for an expeditionary Alliance, but the NAC decided not to employ the NRF in ISAF. From the outset, NATO failed to implement its collective logistics doctrine in ISAF, and member nations resisted implementing the collective option of MC 319/2. NATO inherited an operation two years ongoing that consisted of independent regional areas managed by ISAF troop contributing nations (TCN) supported through independent national logistics operations. This Cold War-era logistics pattern was so well entrenched that 2009 end of tour reports bemoaned HQ ISAF CJ4's non-existent theater support units and the lack of ability to command or even coordinate national logistics efforts.¹⁸ The failure of NATO heads of state and government to reach consensus on how to use the NRF kept NRF logistics command structures and units from being implemented in NATO's ISAF operations.¹⁹

17. Jeffrey P. Bialos and Stuart L. Koehl, *The NATO Response Force: Facilitating Coalition Warfare Through Technology Transfer and Information Sharing*, (National Defense University Center for Technology and National Security Policy, September 2005): viii–ix, accessed May 2, 2012, <http://www.ndu.edu/CTNSP/docUploaded/DTP%2018%20NATO%20Response%20Force.pdf>.

18. Colonel U.S. Army Shelia J-McClaney, Lieutenant Colonel CAN Army Jenny M. Newton, and Major U.S. Army Douglas A. LeVien, "Innovative Insights into ISAF's Logistical Operations in Afghanistan: The August 2008 to February 2009 Rotation," (End of Tour Report for JFC HQ Brunssum J4 Chief of ISAF Logistics, January 23, 2009), 2.

19. Robert Bell, "Sisyphus and the NRF," *NATO Review* (Autumn 2006), <http://www.nato.int/docu/review/2006/issue3/english/art4.html>.; Colonel U.S. Army Edward M. Daly, "NATO Logistics Reform: Central to NATO Response Force (NRF) Success," (U.S. Army War College Strategy Research Project, March 15, 2008): 11, accessed May 8, 2012, <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA480122>.

Problems with transformation and cooperation continued to plague NATO's effort to establish and enforce collective multinational logistics, while resource and environmental constraints further reduced effective logistics support. As NATO assumed command of ISAF, major operations in Iraq drew away the political attention, forces, and logistics resources from many ISAF TCNs like the U.S. and the UK, and further complicated NATO's ability to establish effective logistics command and control operations.²⁰ Because of Afghanistan's long, difficult lines of communication (LOC) and the immensity of ISAF's area of operations, few nations were able to assume responsibility as the ISAF lead logistics nation or act as the role specialist nation for fuel support. In addition, NATO's logistics command structures lacked the maturity needed to manage a developing logistics environment that was further complicated by multiple sovereign national systems unwilling to subordinate themselves to an Alliance logistics command structure. Instead, regional and individual national efforts provided fuel to ISAF forces with very little coordinated effort.

The effort very much resembled NATO's traditional Cold War-era logistics where each nation provided for its own. The U.S. Department of Defense (DoD), through DLA Energy and U.S. Army theater support commands, provided fuel to Regional Command (RC) East. Germany provided fuel support to their RC North operations at Mazar-E-Sharif, and France contracted local fuel support for their operations in RC Capital. Even small TCNs, like the Dutch, provided their own fuel support at Tarin Kowt in RC South. In the first years of ISAF operations, NATO member nations individually supported three key air logistics hubs at Herat, Kandahar, and Kabul. Various political, economic, and operational concerns contributed to declining national support of these key logistics hubs.

20. In 2002–2003, I was assigned to the Joint Task Force-Southwest Asia Air Mobility Division under the Director of Mobility Forces for USCENTCOM and witnessed first hand the U.S. shift of emphasis away from Afghanistan. Our unit struggled to provide effective logistic support to Afghanistan and the Horn of Africa as significant resources went to the staging of personnel and materiel in preparation for Operation IRAQI FREEDOM, and then additional logistical resources were drawn off for the execution of the invasion of Iraq. M.J. Evans.

By 2005, NATO member nations withdrew their support and national assets, and left NATO to manage operations and assume financial responsibility for these airfields.²¹

With approval from the NAC, NATO assumed responsibility for three key ISAF air hubs and designated them as NATO APODs under direct command of NATO through HQ ISAF and then later HQ ISAF Joint Command (IJC). At the APODs, the NATO common budgets provided funds for fuel-related engineering and infrastructure projects based on the concept of minimum military requirement. NATO planners met the most basic infrastructure requirements for storage and distribution of fuel products through traditional contracting systems and national-provided materiel.²² At the end of 2005, the NATO APODs and the nations' regional fuel programs represented the early ISAF fuel supply system. This early ISAF fuel system generated a stovepiped approach that lacked coherent theater-wide logistics command and control and failed to provide complete coverage for all ISAF areas of operation. However, this early ISAF fuel system would create an opportunity for NATO logisticians to apply the principles of collective logistics in a novel way.

B. NATO ISAF FUEL TEAM—THE BASIC ORDERING AGREEMENTS

At the end of 2005 and beginning of 2006, a unique type of NATO collective logistics emerged to support the NATO APODs and ISAF TCNs who fell outside of the national fuel logistics systems. The absence of effective national leadership or national logistics support units compelled NATO to assume the responsibility for satisfying fuel requirements at the APODs with limited financial support from the NATO common budgets. From ISAF's operational command in Europe, Allied Joint Force Command Headquarters (JFC HQ) Brunssum, three basic ordering agreements (BOA) were written to provide commercial fuel support to the NATO ISAF APODs. Together, the BOAs are commonly known as the NATO fuel BOA or the BOA.

21. Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum fourth Fuel Chief executing the BOA), interview by Michael Evans, April 15, 2012, interview McMurry.mp3, Evans Private Oral History Collection.

22. Colonel U.S. Air Force Jonathan Webb (JFC HQ Brunssum Engineer for Kabul Afghanistan International Airport), interview by Michael Evans May 13, 2012, interview Webb.mp3, Evans Private Oral History Collection.

The NATO fuel BOA was a unique solution that allowed NATO to provide fuel support to ISAF nations, who could not or would not provide fuel support to their own forces, without financial backing from the NATO common budgets.²³ The BOA was not a contract. Instead, it was a series of agreements for commercial fuel support that were awarded under NATO acquisition and contracting rules to businesses from NATO member nations. The BOA was based solely on sales, and represented an agreement with no upfront costs and no requirement for NATO member nations or ISAF partner nations to capitalize the agreements or pay a startup fee, or “buy in,” in order to initiate commercial fuel support operations. Contractors provided fuel and the required logistics infrastructure to participating ISAF nations and NATO command operations through the proceeds gained from the sale of fuel. NATO set a price per liter (PPL) with each contractor, and then leveled the PPL to provide a single price per fuel commodity type across the whole of ISAF operations. The NATO ISAF fuel team periodically adjusted the PPL based on international market fluctuations in order to meet changes to the ISAF commander’s fuel and service requirements. They adjusted the PPL for set time periods according to anticipated recovery costs associated with a contract modification such as new facilities, new service requirements, additional commercial strategic reserves, etc.

Because NATO owned and managed the fuel BOA, they acted as a type of middleman between ISAF nations and the BOA contractors. NATO purchasing and contracting structured the BOA in this way so ISAF nations would not assume liability in the instruments. At any time, a nation could choose whether or not to use the BOA’s fuel services. These nations only paid for fuel when contractors rendered services or delivered fuel to agreed locations. ISAF nations assumed no unaccounted costs and paid for all logistics services through the PPL. Any additional costs to nations were solely at its preference. BOA contractors proved willing and capable in numerous cases by providing complete logistics service, such as strategic fuel acquisition, management and operations of national fuel infrastructure, local fuel storage systems, internal distribution systems, and delivery to end user (aircraft, generator, vehicle, forward operating base, etc.).

23. Lieutenant Colonel U.S. Army (ret.) Brian McMurry (JFC HQ Brunssum second Fuel Chief executing the BOA), interview by Michael Evans, April 18, 2012, interview McMurry.mp3, Evans Private Oral History Collection.

Through the PPL, the BOA supported full spectrum fuel operations and provided strategic bulk fuel delivery, strategic bulk theater fuel reserves, and internal theater distribution. Full spectrum fuel operations included managing NATO APODs, and providing manning and equipment to support fuel receipt, storage, quality control, delivery to end user, and accounting. The contractors directly invoiced the customer for all fuel sales, with NATO acting as a monitor and as a mediator in cases of dispute.

The command structure that managed the BOA was simple, and adeptly responsive to the ISAF Commander's and national requirements. Participating ISAF nations forecasted fuel and infrastructure requirements through HQ ISAF CJ4, later through HQ IJC CJ4 in Kabul, to the JFC HQ Brunssum Logistics Resources Branch Fuels Office. The JFC HQ Brunssum Fuel Office, in coordination with their Purchasing and Contracting Office, validated and executed the requirements. The NATO ISAF fuel team accomplished this at JFC HQ Brunssum with three fuels staff officers, two purchasing and contracting officers, a liaison from the U.S. Defense Logistics Agency (DLA) Energy, and a representative from one of its contractors, the Supreme Group. Within Afghanistan, two NATO staff officers and one staff noncommissioned officer managed theater operations with assistance from a contract representative and contractor liaisons in each regional command. The U.S. provided an additional liaison officer to HQ ISAF from DLA Energy's Joint Petroleum Office in U.S. Central Command (USCENTCOM).²⁴ Together the NATO ISAF fuel team effectively incorporated the vast majority of the ISAF fuel system into one coordinated body under direct command of the dual hatted ISAF/U.S. Forces Afghanistan Commander (COMISAF). By implementing liaison positions, COMISAF leveraged his position as Commander of U.S. Forces in Afghanistan and effectively instituted the MC 319/2 ideals of collective logistics operations. Figure 1 depicts this NATO ISAF fuel command structure.

24. Chief Master Sergeant U.S. Air Force (ret.) Donald Gulledge (DLA Energy Representative to JFC HQ Brunssum), interview by Michael Evans, April 12, 2012, interview Santiago.mp3, Evans Private Oral History Collection. NOTE: Mr. Gulledge was interviewed jointly with LTC Santiago.

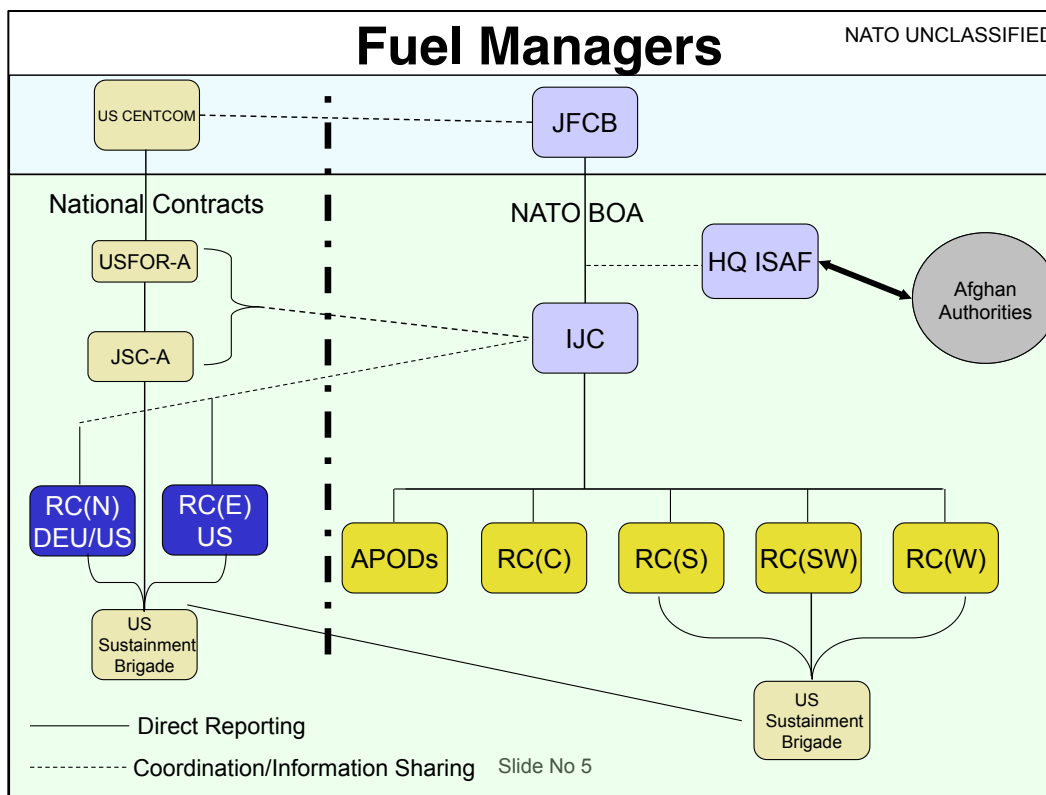


Figure 1. NATO ISAF Fuel Management Structure as of May 15, 2012.²⁵

The NATO fuel BOA area of operation includes, but is not limited to: RC West, RC South, RC Southwest, RC Capital (excluding Bagram Air Base), and selected locations in RC North. With the 2006 U.S. drawdown of forces in RC South, the NATO ISAF fuel team expanded the BOA’s scope to replace existing U.S. fuel supply systems and infrastructure. When the U.S. returned to RC South in 2009-2010, USCENTCOM and DLA Energy chose to use the NATO fuel BOA instead of re-establishing a national system.²⁶ By the summer of 2010, the BOA represented half of all fuel support to ISAF, providing more than three million liters of fuel daily to TCNs in Afghanistan. For certain fuel commodity types, the NATO fuel BOA satisfied the complete requirement. The

25. From: Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) “Fuel Concept on ISAF,” (presentation to the Senior NATO Logisticians’ for ISAF, Brunssum, The Netherlands, May 15, 2012).

26. Lieutenant Colonel U.S. Army (ret.) Brian McMurry (JFC HQ Brunssum second Fuel Chief executing the BOA), interview by Michael Evans, April 18, 2012, interview McMurry.mp3, Evans Private Oral History Collection.

BOA allowed NATO to act as a role specialist nation on par with DLA Energy within Afghanistan.²⁷ Over time, the NATO ISAF fuel team expanded the BOA to meet emerging COMISAF and TCN requirements. For the first time NATO, as its own entity, had become a significant and tangible contributor to the NATO collective logistics system. Figures 2 through 4 provide an overview of the regional areas of operation of the lead fuel suppliers for F-34 (jet fuel) and F-54 (diesel fuel). Figure 2 depicts ISAF areas of responsibility and regional command daily fuel requirements. Figure 3 depicts the strategic fuel reserve facilities of NATO and national suppliers. Figure 4 depicts the tactical delivery responsibilities of NATO and national suppliers.

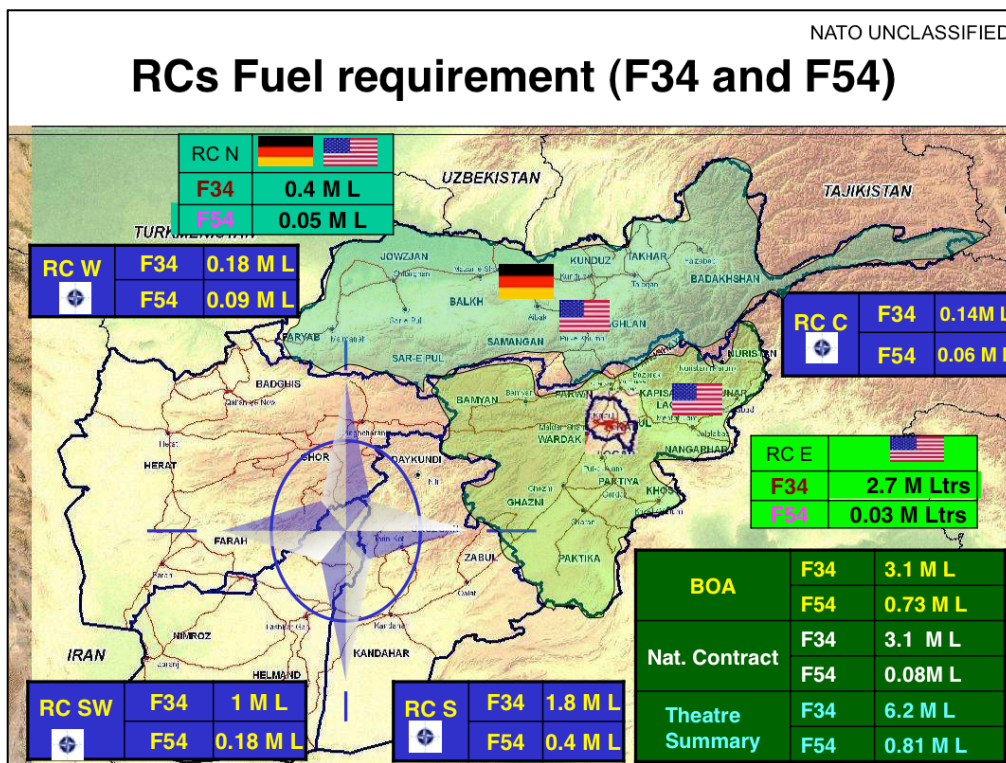


Figure 2. ISAF Regional Command Areas of Responsibility and Daily Fuel Requirements as of May 15, 2012.²⁸

27. North Atlantic Treaty Organization, *Allied Joint Publication 4.9 – Modes of Multinational Logistics*, November 2005, 3–1.

28. From: Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) “Fuel Concept on ISAF,” (presentation to the Senior NATO Logisticians’ for ISAF, Brunssum, The Netherlands, May 15, 2012).

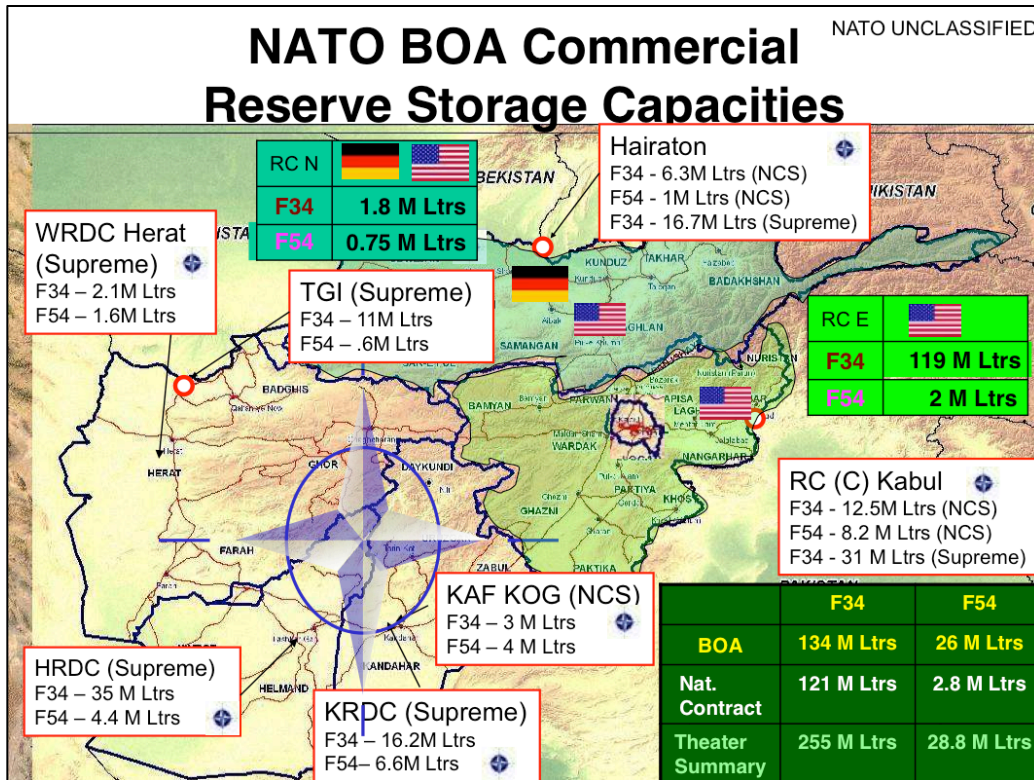


Figure 3. ISAF Strategic Fuel Reserve by National Supplier as of May 15, 2012.²⁹

29. From: Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) "Fuel Concept on ISAF," (presentation to the Senior NATO Logisticians' for ISAF, Brunssum, The Netherlands, May 15, 2012).

Tactical Delivery Support

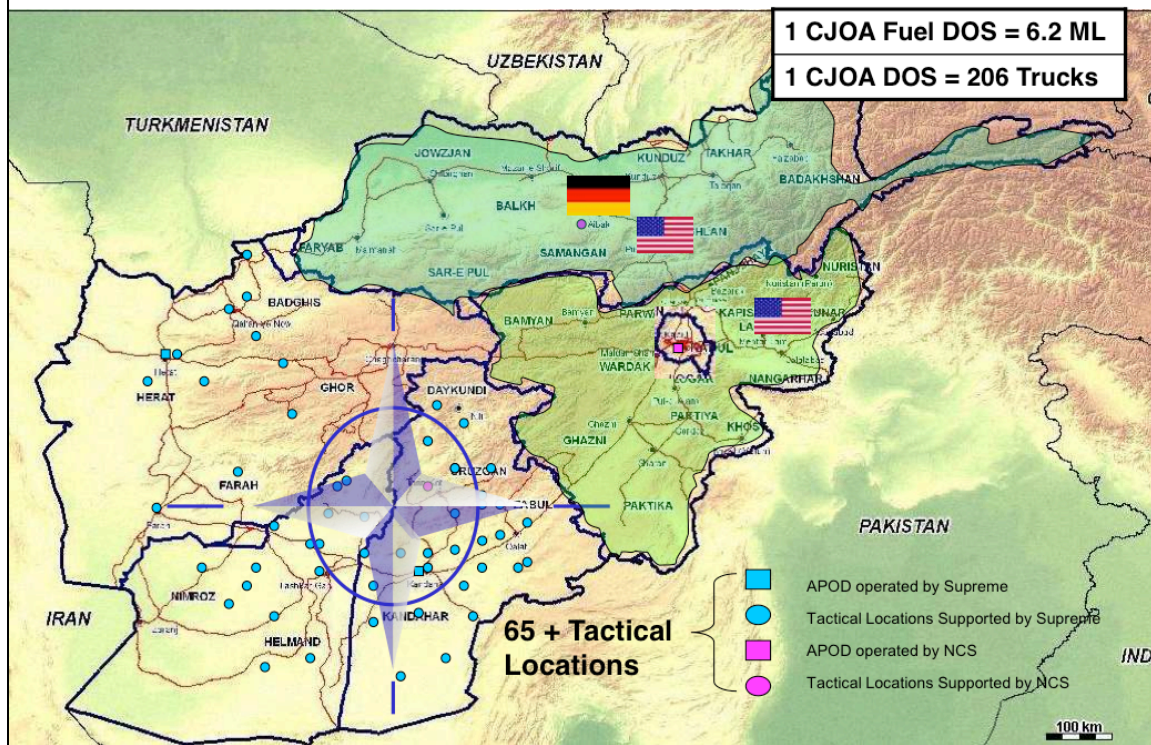


Figure 4. ISAF Tactical Delivery Regional Responsibility by National Supplier as of May 15, 2012.³⁰

C. CONCLUSION

For the NATO logistics community, the post-Cold War era was marked by triumphs in forging new doctrine but failures in executing that doctrine in real-world operations. In 2005, a unique opportunity arose within ISAF. Because of Afghanistan’s difficult LOCs and competing military operations, key nations were incapable or unwilling to take the lead for ISAF fuel. These circumstances compelled NATO to become a role specialist nation for fuel. Through the BOAs, the NATO ISAF fuel team filled a shortfall in national logistics requirements. The pay-as-you-go concept of the BOA allowed multiple nations to integrate into NATO ISAF fuel logistics without

30. From: Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) “Fuel Concept on ISAF,” (presentation to the Senior NATO Logisticians’ for ISAF, Brunssum, The Netherlands, May 15, 2012).

causing political concern over sovereignty or command and control. Because the BOAs did not use the NATO common budgets, it did not raise any national political concerns over financing ISAF fuel operations. The BOA, in combination with DLA Energy, provided COMISAF with direct command and control over the majority of ISAF fuel logistics. Chapter III will describe in greater detail ISAF's command and control of multinational fuel logistics, which has not been seen on such a grand scale since WWII. This historical comparison will also explain how consolidating command and control of logistics under a supreme commander shaped the political environment and enabled effective fuel operations.

III. BIG LOGISTICS

This chapter explains the development of the NATO fuel BOA through a historical focus on the evolution of multinational and U.S. fuel support operations. It begins with a description of WWII fuel supply operations as a backdrop to today's war in Afghanistan. It continues with a discussion of the varied strategic-level approaches of the U.S. and UK toward government control of the supply chain for the national fuel supply, and how the two governments worked together to meet the fuel requirements of the Allies. With the lessons from WWII in mind, this chapter describes the evolution of U.S. strategic fuel support and the creation of the Defense Logistics Agency (DLA) and DLA Energy. As the largest Allied nation capable of supporting NATO and its nations with fuel logistics, the U.S. has greatly influenced NATO operations, with OEF serving as an important contemporary example. The final section of this chapter will describe the groundbreaking impact that the NATO fuel BOA had on enabling operations in OEF. As compared to historical NATO and U.S. fuel operations, the innovative NATO fuel BOA was a significant, and effective, departure from traditional operations.

A. CONTROL AND ALLOCATION

In 1944, after the break-out from Normandy, General Patton commanded the U.S. Third Army as it neared Metz, France while Field Marshal Montgomery advanced north toward the Low Countries with the Twenty First Army Group supported by the U.S. First Army. Allied logistics had sufficient quantities of fuel for each thrust, but lacked the capability to simultaneously deliver that fuel to both advancing fronts. Patton's diary provides a glimpse into one of the classic examples of decision-making in multinational operations. On August 30, 1944, Patton wrote:

Bradley, Bull (Ike's G-3) and Leven Allen were all talking when I arrived. I asked to present my case for an immediate advance to the east and a rupture of the Siegfried Line before it can be manned. Bradley was sympathetic but Bull—and I gather the rest of Ike's staff—do not concur and are letting Montgomery overpersuade Ike to go north. It is a terrible mistake, and when it comes out in the after years, it will cause much argument.

The British have put it over again. We got no gas because, to suit Monty, the First Army must get most of it...³¹

Much like the war in Afghanistan, fuel supply and distribution posed a considerable challenge to the Allied commander in WWII. Patton's account of U.S. General Dwight D. "Ike" Eisenhower's decision highlights one commonality between the two conflicts that share so many with regard to multinational logistics and fuel supply operations. In order to showcase the innovativeness and flexibility of the NATO fuel BOA, it is useful to compare and contrast NATO ISAF fuel support operations against Allied operations during WWII. It was the commonalities, as well as differences, between these conflicts that enabled the development and success of the NATO fuel BOA.

The two conflicts are comparable because both were characterized by an expeditionary Euro-Atlantic partnership, the Allied commander's ability to execute logistics, and the scale in which daily fuel was required and handled in combat across difficult lines of communication (LOC). In fact, NATO's system of multinational logistics actually developed from this WWII setting and is typified by multinational commands with fielded sovereign national units that are heavily reliant on petroleum products. The development of NATO expeditionary fuel logistics was wholly dependent on those sovereign national units. Like the Allied nations of WWII, when given a choice whether to exercise sovereign or collective logistics support options, NATO nations have historically chosen the former, leaving the Alliance without a lead nation at the helm. Consolidating authority under one supreme commander gave the Alliance the leadership required to make influential decisions that benefit all member nations.

General Eisenhower was regarded as having an extraordinary ability to command, and was entrusted with the authority to properly allocate logistics resources among the Allies. The ISAF Commander, in his role as both the U.S. and NATO commander in Afghanistan, most closely parallels this WWII model of multinational command. Because of doctrinal supreme authority, the ISAF Commander was able to decide on the best course of action for all member nations in multinational operations. With no single role

31. George S. Patton, *The Patton Papers: 1940–1945*, ed. Martin Blumenson (Bridgewater: Replica Books, 1999), 531.

specialist nation in charge of NATO ISAF fuel logistics, the ISAF commander was empowered with an unprecedented control over multinational fuel logistics. Supported by JFC HQ Brunssum and the U.S. fuels community, his staff developed a flexible fuel support program that did not bind participating nations into long-term fuel contracts. This allowed willing Allied nations who relied heavily on fuel to sustain operations to participate in ISAF where they could not have done so independently. It was this degree of supreme authority to command and control multinational fuel logistics operations that led to and enabled the success of NATO ISAF fuel operations.

At the height of WWII in the European theater of operations, massive logistics bureaucracies supported the Allied western front as its forces crossed the continent into Germany. The U.S. logistics system alone supported 72 U.S./French divisions that consisted of more than 5.1 million personnel, including prisoners of war and displaced peoples. In the final offensive of the European theater, U.S. logisticians provisioned 60 multinational divisions with 13 million liters of fuel daily.³² Due to the development of and dependency on bigger, more lethal technology, even more fuel is required to support today's forces. In contrast to the huge WWII logistics bureaucracies, an extremely small staff of ISAF logisticians sustained 130,000 personnel from 50 nations with six million liters of fuel daily.³³ Although the war machine and the staff available to sustain it are smaller, a greater fuel requirement exists today than in WWII. In fact, the ISAF war effort required 46 liters of fuel per man per day, as compared with WWII, which required 2.5 liters of fuel per man per day. The NATO fuel BOA was the ideal vehicle that enabled a smaller staff to provide massive amounts of fuel to multinational forces by entrusting a greater degree of control to contractors instead of fielded military support forces.

Although the logistics commands in these conflicts were very similar, the structures supporting WWII and ISAF operations were vastly different in the control each maintained over the fuel supply chain. The governments that organized, trained and

32. Roland G. Ruppenthal, *Logistical Support of the Armies: Volume II September 1944–1945*. (Washington: Center for Military History United States Army, 1995), 433–435.

33. North Atlantic Treaty Organization, *International Security Assistance Force: Key Facts and Figures*, May 15, 2012, accessed May 26, 2012, <http://www.nato.int/isaf/docu/epub/pdf/placemat.pdf>.

equipped (and fueled) their enormous war machines of WWII also exercised a greater degree of control of the fuel supply chain. The U.S. and UK controlled nearly the entire fuel supply chain, from the source of the raw product, to refinement, to transportation and distribution to tactical Allied forces (“the customer”). In contrast, NATO ISAF fuel operations relinquished a greater degree of control to the contractor. These contractors, in many cases, owned and delivered fuel from the refinery directly into a nation’s weapon system, and even provided its own security to convoys and storage sites. ISAF departed from traditional U.S. fuel support operations by empowering their contractors. Yet, even U.S. DLA Energy has let contracts to deliver fuel to customers at remote forward operating bases (FOBs). By entrusting fuel operations to contractors, the U.S. and ISAF reduced military support personnel and fielded more combat forces on the battlefield.

B. U.S. AND UK FUEL SUPPORT IN WORLD WAR II

In the late 1930s, U.S. President Franklin Roosevelt struggled to rebuild the American economy through federal coordination of U.S. industrial production, including petroleum. At the same time, Europe and Asia were spiraling into violence in WWII. On September 1, 1939, Germany invaded Poland using *Blitzkrieg* tactics that allowed them to advance more than forty miles a day. The German technological advantage that enabled it to conquer Poland also required massive amounts of fuel, and thus firmly established petroleum as the key to modern military operations. This forced world leaders to bolster national strategies to protect and increase their supplies while reducing their adversaries’ access to petroleum supplies. By 1939, these grand strategies restricted the Allied petroleum sources to the Middle East and the Americas, and stretched supply LOCs across several thousand miles of hostile territory.³⁴ Allied nations eventually overcame these difficulties to meet the needs of the European theater of operations, but their successes in managing the petroleum supply chain revealed the extreme difficulty that multinational military operations faced in coordinating the wartime efforts of sovereign nations.

34. Harold F. Williamson et al., *The American Petroleum Industry: The Age of Energy 1899–1959*. (Evanston: Northwestern University Press, 1963), 747–749.

1. Fuel Supply Management at the National Level

The UK developed its WWII wartime petroleum administration and policy with an understanding that military operations must be supported by tight control over its national economy. Although the UK had access to worldwide stocks of petroleum, it had very few naturally occurring petroleum deposits within its national borders. Pre-war British oil policy had attempted to isolate their colonial oil fields and gain control over foreign oil as a means of security, but by 1939 British-friendly Middle Eastern states represented only five percent of the world oil production.³⁵ British foreign policy also focused on securing concessions from friendly governments to ensure access to petroleum for its armed forces. Both policies created a heavy dependence on international companies and foreign oil that were contingent on maintaining friendly relationships with international actors.³⁶ But as WWII neared, the British focused on centralized petroleum management of government agencies, its civil sector, and British controlled companies.

In January 1939, the UK established the Petroleum Department as the executive agency in charge of supply, rationing, and distribution of all petroleum products. The Petroleum Department executed policy and operations through the Oil Board. In addition, the Oil Board determined petroleum transportation priorities. The British government's last pre-war administrative development was the Bunker Control Committee, which established control over worldwide national reserves, and allowed it to place diplomatic pressure on foreign nations by withholding fuel from their ships if they were harmful to UK efforts. The committee also helped to control reserve stock usage in order to ensure efficient use of the tanker resupply operations.³⁷

The British government's centralized petroleum organization was coupled with a similar organization from the commercial industry to support wartime operations. Shell, Standard Oil, and Anglo-Iranian were integrated companies that managed eighty-five

35. Harold F. Williamson et al., *The American Petroleum Industry: The Age of Energy 1899–1959*. (Evanston: Northwestern University Press, 1963), 748.

36. D.J. Payton-Smith, *Oil: A Study of War-time Policy and Administration*, (London: Her Majesty's Stationery Office, 1971), 24–25.

37. D.J. Payton-Smith, *Oil: A Study of War-time Policy and Administration*, (London: Her Majesty's Stationery Office, 1971), 41–43.

percent of the British petroleum industry, and which effectively controlled the majority of the British petroleum sources, refining capability, and transportation systems. After the September 1938 Munich Crisis had increased tensions in Europe, these industry leaders came together with other petroleum companies to create a combined distributing agency called the Petroleum Board. In the event of war, the members agreed to put aside such concerns as industry competition and brand names, and focus production on the grades of fuel required for the war effort. All member assets, facilities and transport were pooled under central management of the board, where each company received an allocation of business based on the proportion of the industry they managed in the year prior to the outbreak of war. In March 1939, the British government accepted the group's proposal, appointed its representative as chairman, and placed the Petroleum Board administratively under the Petroleum Department.³⁸ The Petroleum Board became the key executor of policy. Their companies provided the tangible results of refining and transporting petroleum products to Great Britain.

Shortly after Britain declared war on Germany in September 1939, Prime Minister Chamberlain established the Oil Control Board as a War Cabinet Sub-Committee. The board stood at the highest level of petroleum control within the British government, and was comprised of representatives from all the departments, military services, and industry who had any action with or requirement for petroleum. The Prime Minister charged the board with ensuring supply of petroleum to the nation's forces and civil sectors, and gave the board final arbitration authority in competing interests. The board established a positive and open relationship among the government departments, commercial industry, and the military services that allowed a free flow of information on stock levels, resupply requirements, and production projections.³⁹

Although Britain was heavily dependent on foreign oil, it maintained centralized governmental control of its commercial oil companies to ensure consistent, uninterrupted supply to its war machine. In contrast, the United States held large oil resources and had a

38. D.J. Payton-Smith, *Oil: A Study of War-time Policy and Administration*, (London: Her Majesty's Stationery Office, 1971), 43–44.

39. D.J. Payton-Smith, *Oil: A Study of War-time Policy and Administration*, (London: Her Majesty's Stationery Office, 1971), 80.

robust, independent American oil industry. As world hostilities grew, President Roosevelt declared an unlimited national emergency on May 27, 1941. On May 28 he followed with a letter creating the Office of Petroleum Coordinator of National Defense, headed by the U.S. Secretary of Interior.⁴⁰ On December 2, 1942, the president issued Executive Order 9276, which transformed the Office of Petroleum Coordinator into the Petroleum Administration for War (PAW).⁴¹ Although it possessed a robust oil industry and large natural petroleum deposits, the U.S. established the PAW to coordinate civil and government actions in order to provide adequate supplies of petroleum for the U.S. war effort.

The President charged the PAW with developing policy, plans, and programs for the effective development and utilization of U.S. petroleum. The PAW also provided the key link between the U.S. oil industry and the various agencies of the Federal Government. To this end, the PAW established the overall U.S. petroleum requirements and the necessary resources the oil industry required to meet U.S. needs. The PAW provided its recommendations on allocation of petroleum products and resources to the War Production Board for ultimate approval. In addition, the PAW worked closely with the War Shipping Administration to transport fuel, and with the Office of Defense Transportation to execute pipeline projects.⁴² Although it had the status of an independent agency, the PAW still worked under the authority of the War Production Board. The War Production Board was the senior executive body for management of U.S. national resources for the war effort. Together, the PAW and War Production Board provided executive management, but the PAW mobilized the American oil industry by partnering with the industry leaders.

40. U.S. President Franklin D. Roosevelt to U.S. Secretary of the Interior Harold L. Ickes, May 28, 1941, in *A History of the Petroleum Administration for War: 1941–1945*, ed. John W. Frey and H. Chandler Ide (Washington: United States Government Printing Office, 1946), 374–375.

41. Executive Order Number 9276, in *A History of the Petroleum Administration for War: 1941–1945*, ed. John W. Frey and H. Chandler Ide (Washington: United States Government Printing Office, 1946), 375–377.

42. Executive Order Number 9276, in *A History of the Petroleum Administration for War: 1941–1945*, ed. John W. Frey and H. Chandler Ide (Washington: United States Government Printing Office, 1946), 375–377.

Both the British and the U.S. approached WWII fearing that their petroleum industries could not meet the needs of national mobilization and so established a system of tight governmental controls to manage production and allocation. These government controls existed at the senior-most levels, while the petroleum industry continued to be manned and operated by civilians. The governments did set oil prices and executed civilian rationing programs, but the oil companies still had to produce and deliver a finished product for the war effort. The 1946 official history of the U.S. PAW concluded that the “most significant and distinguishing aspect of the Government-Industry partnership is perhaps the most difficult to define. For it is an expression of spirit.”⁴³ In both countries, oil companies met urgent requirements with extensive expansion or retooling of their facilities, and they built massive transnational and undersea pipeline distribution systems. These companies frequently changed product yields to meet government requirements, and suppressed competition to cooperatively overcome technology challenges and meet wartime production requirements.⁴⁴ Most significant, ship crews continued sailing their tankers to Europe in the face of dangerous seas and heavy losses to German submarine warfare.⁴⁵ Tables 1 and 2 provide conservative estimates of British and U.S. merchant losses during WWII.

43. John W. Frey and H. Chandler Ide, ed., *A History of the Petroleum Administration for War: 1941–1945*, (Washington: United States Government Printing Office, 1946), 69.

44. John W. Frey and H. Chandler Ide, ed., *A History of the Petroleum Administration for War: 1941–1945*, (Washington: United States Government Printing Office, 1946), 69.

45. D.J. Payton-Smith, *Oil: A Study of War-time Policy and Administration*, (London: Her Majesty’s Stationery Office, 1971), 189, 375–376.

	Number serving	War Dead	Percent	Ratio
Merchant Marine	243,000*	9,521**	3.90%	1 in 26
Marines	669,108	19,733	2.94%	1 in 34
Army	11,268,000	234,874	2.08%	1 in 48
Navy	4,183,466	36,958	0.88%	1 in 114
Coast Guard	242,093	574	0.24%	1 in 421
Total	16,576,667	295,790	1.78%	1 in 56

*Number varies by source and ranges from 215,000 to 285,000.

War Shipping Administration Press Release 2514, January 1, 1946, lists 243,000

**Total killed at sea, POW killed, plus died from wounds ashore

Table 1. Comparison of U.S. Merchant Marine Losses to the U.S. Services Losses in WWII.⁴⁶

	Ships Lost		Total Crew in Lost Ships		No. of Crew Lost		Percentage of Crew Lost	
	By U-boat	All Enemy Causes	By U-boat	All Enemy Causes	By U-boat	All Enemy Causes	By U-boat	All Enemy Causes
1939	50	95	2,361	3,857	260	495	11%	13%
1940	225	511	11,285	22,923	3,375	5,622	30%	35%
1941	288	568	14,426	25,345	5,632	7,838	12%	31%
1942	452	590	28,259	36,200	8,413	9,736	30%	27%
1943	203	266	13,104	17,412	3,826	4,606	29%	26%
1944	67	102	4,440	5,931	1,163	1,512	26%	25%
1945	30	45	1,446	2,081	229	323	16%	26%
Total	1,315	2,177	75,321	113,749	22,898	30,132	30%	26%

Table 2. Casualties Sustained by Personnel of British Merchant Ships 1939–1945.⁴⁷

Although the companies time and again proved their “spirit” and were capable and willing to meet the challenges of wartime production, they did so because they were assured fair financial reimbursement for their product and excess wartime expenses from

46. From: American Merchant Marine at War, “U.S. Merchant Marine Casualties during World War II,” accessed August 9, 2012, <http://www.usmm.org/casualty.html>.

47. From: Terry Hughes and John Costello, *The Battle of the Atlantic* (New York: Dial Press/James Wade, 1977), 304. Hughes and Costello’s data reflects the most conservative estimate of British wartime losses.

their customers.⁴⁸ The shipping companies provided the vital link between the oil producers and the Allied customers prosecuting the war. In the United States, President Roosevelt went so far as to nationalize the shipping industry using the powers granted him through the Merchant Marine Act of 1936. To coordinate this massive transportation effort President Roosevelt established the War Shipping Administration in order to organize, operate, man, and maintain the civilian portion of the wartime shipping operation. While shipping companies turned control over to the United States, the War Shipping Administration utilized expertise of these companies whose agents continued to oversee daily seagoing and shoreside operations. The U.S. government paid daily, fixed rates for the companies to operate their ships in addition to compensation for the use of each ship. Most important, the War Shipping Administration made nationalization financially feasible by providing the war-risk insurance for each ship, its cargo, and its crew. The U.S. Army and U.S. Navy maintained similar but separate fleets, providing comparable war-risk insurance for their merchant carriers.

By assuming all war-risk, the U.S. government built a partnership with the shipping industry drawing on their expertise and willingness to sail into danger.⁴⁹ A partnership in which Robert Browning wrote of this “spirit” that the PAW had tried to describe:

Historians have often overlooked the sealift capacity of this fleet. During the war, 203,552,000 tons of dry cargo, 64,730,000 tons of petroleum products, 1,000,00 vehicles, 24,000 aircraft, and over 7,000,000 troops and civilians were carried by American ships. The ability to move personnel and this amount of material over such long distances is staggering. It is also completely beyond today’s capability. To put this operation in perspective, American ships delivered 8,000 tons of cargo every hour of every day and every night during the entire war. This tremendous logistical effectiveness established the Allies’ merchant

48. John W. Frey and H. Chandler Ide, ed., “Governmental Financing: Government Expenditures Relating to Petroleum in Which PAW had Responsibility,” in *A History of the Petroleum Administration for War: 1941–1945*, (Washington: United States Government Printing Office, 1946), Appendix 6.

49. Robert M. Browning Jr., *U.S. Merchant Vessel War Casualties of World War II*, (Annapolis: Naval Institute Press, 1996), xviii.

marine as perhaps the most important strategic factor leading to the defeat of the Axis powers during the war.⁵⁰

This unique partnership between industry and government allowed the industry to stay solvent while at the same time meeting the wartime needs of the Allied nations.

The Allied governments established agencies like the Petroleum Board and the PAW to gather, prioritize, and plan national petroleum requirements; however, lack of an awareness of military requirements in the United States hampered government-industry partnerships. For security reasons, the U.S. military refused to provide the PAW with information on oil tanker operations and theater petroleum consumption rates. In addition, military representatives appointed to the War Production Board each fought to meet their own service's fuel requirements instead of providing a single, prioritized military effort.⁵¹ This affected the PAW's ability to efficiently allocate limited transportation assets, manage refining and bulk fuel facility levels, and generally coordinate Allied fuel support. In addition to the normal emergencies that arise in war, mismanagement accounted for many short-notice requirements. This created artificial transport shortages and imposed last-minute product yield changes on the oil industry. Not until the summer of 1943 did the U.S. Army-Navy Petroleum Board and the PAW begin to work closely to establish clear military petroleum requirements by theater of operation so that short term and long term world-wide petroleum programs could be developed for the U.S. and the Allied nations.⁵²

2. Allied Fuel Supply Management

Both the British and U.S. governments established independent, tightly organized petroleum coordination bodies; however, the Allies established no overall agency or body to manage a combined war effort. Instead, the Allies coordinated petroleum requirements through diplomatic channels and a series of liaison relationships. At the operational

50. Robert M. Browning Jr., *U.S. Merchant Vessel War Casualties of World War II*, (Annapolis: Naval Institute Press, 1996), xvii–xviii.

51. John W. Frey and H. Chandler Ide, ed., *A History of the Petroleum Administration for War: 1941–1945*, (Washington: United States Government Printing Office, 1946), 208.

52. John W. Frey and H. Chandler Ide, ed., *A History of the Petroleum Administration for War: 1941–1945*, (Washington: United States Government Printing Office, 1946), 72–76.

theater level, the Allies chose a more pragmatic course. The Allied military leaders divided the operational theaters and established a support system where specific Allied nations would provide petroleum support to their agreed areas. Although national administration arrangements and operational division of labor agreements provided the necessary politically independent support system, the complete petroleum supply chain would only coalesce in the European theater of operation under a single Allied commander.

Prior to its official entry into WWII, the U.S. developed policy to support the Allies but not to go to war. By 1941, President Roosevelt initiated a national mobilization and rearmament program that provided the anticipated support for both U.S. national requirements and British wartime needs.⁵³ However, even this proved to be inadequate, as the Axis forces decimated the British petroleum tanker fleet. In April 1941, the British government asked for assistance and President Roosevelt secured the support of U.S. ship owners to release fifty tankers in support of the British crisis.⁵⁴ In this first Anglo-American petroleum operation, U.S. ship owners voluntarily coordinated a supply shuttle from the Caribbean and U.S. Gulf States to the United States and Canadian east coast. There, the U.S. ships transferred their loads to British-flagged tankers for final delivery across the Atlantic. Although the petroleum products were handled multiple times, the shuttle system shortened British sailing time by 15 days and satisfied the U.S. legal restrictions that forbade U.S.-flagged trans-Atlantic movement. This first operation would spur President Roosevelt to establish what would become the PAW.⁵⁵ In addition, the shuttle operation set the tone for the relationship of British-U.S. Allied petroleum operations throughout the remainder of WWII.

Although they were cooperative, the Allies were also wary of each other, and resisted establishing a single Allied petroleum body. In an earlier 1940 attempt at Allied

53. John W. Frey and H. Chandler Ide, ed., *A History of the Petroleum Administration for War: 1941–1945*, (Washington: United States Government Printing Office, 1946), 85.

54. Harold F. Williamson et al., *The American Petroleum Industry: The Age of Energy 1899–1959*. (Evanston: Northwestern University Press, 1963), 753.

55. John W. Frey and H. Chandler Ide, ed., *A History of the Petroleum Administration for War: 1941–1945*, (Washington: United States Government Printing Office, 1946), 85.

cooperation in the European theater, the French and British established the Anglo-French Oil and Shipping Executive to coordinate a combined petroleum effort. This executive body had complete authority over its responsibilities, but the British held the majority of assets and the dominant position in the partnership. Suspicions on both sides about equity of burden sharing further complicated the relationship; however, the German invasion and occupation of France terminated the Anglo-French Executives before the body could mature.⁵⁶

In their next partnership with the United States, the British role was reversed. The British feared the eventual development of Allied petroleum policy would be dominated by the larger resource holder, the United States. Instead of creating an integrated organization, the British pushed for and established an informal Anglo-American petroleum and transport program in which each nation maintained its sovereignty.⁵⁷ The Allies established liaison positions between the U.S. PAW and the British Oil Control Board committees. These exchanges resembled diplomatic missions or embassy attaché organizations. This provided the necessary coordination and information flow without establishing a single executive body, and would remain in place throughout the war and carry into future Allied relationships.⁵⁸

As high-level political machinations dominated the Allied petroleum effort, the Allied Combined Chiefs of Staff developed more practical courses in regional and theater support. After the attack on Pearl Harbor, the United States officially entered WWII and began open petroleum planning and operations with its allies. To maximize effort in meeting civil petroleum demands, the United States took responsibility for supplying petroleum to the western hemisphere while the British supported the eastern hemisphere, the commonwealth countries (except those supported by the United States in the west) and the Middle East. As the war waged on, military theater support operations developed

56. D.J. Payton-Smith, *Oil: A Study of War-time Policy and Administration*, (London: Her Majesty's Stationery Office, 1971), 118–124.

57. D.J. Payton-Smith, *Oil: A Study of War-time Policy and Administration*, (London: Her Majesty's Stationery Office, 1971), 252–253, 476, and 479.

58. John W. Frey and H. Chandler Ide, ed., *A History of the Petroleum Administration for War: 1941–1945*, (Washington: United States Government Printing Office, 1946), 22–23.

in a similar manner. The U.S. military managed petroleum for the Allied forces in the Pacific and North African Theaters, while the British military was responsible for the European Theater. Joint Anglo-American supply operations were coordinated in Australia and New Zealand.⁵⁹ In October of 1944, the European theater was split into two zones in which the UK maintained supply responsibility for forces in Britain and the United States managed the European Continent. Because of the vast infrastructure in Britain and the lack of sufficient facilities on the Continent, large quantities of petroleum stocks were transloaded through Britain for onward movement to Allied forces on the Continent.⁶⁰ Unlike the divided national and regional petroleum operations, the European theater had a uniquely unified control over a multinational supply chain under a single Allied commander with supporting logistics staff.

By direction of the Allied Combined Chiefs of Staff, General Eisenhower assumed command of the European Theater of Operations and Supreme Headquarters Allied Expeditionary Forces (SHAEF). With his appointment, General Eisenhower inherited express powers to command all Allied logistics on the Continent.⁶¹ SHAEF acted as the conduit between the national and regional level supply chain systems and the operational theater logistics system. The SHAEF G4 logistics staff consolidated theater requirements for sourcing by the higher-level systems. Once the national systems delivered fuel to England and later to Europe directly, Allied military logistics functions assumed all petroleum operations.

On the Continent, Eisenhower and the SHAEF logistics staff managed multinational petroleum operations by three main LOCs. Figure 5 depicts the major pipeline systems SHAEF logistics staff developed, and represents the paths that the three LOCs traversed. The LOCs enabled transportation of fuel to the operational areas managed by the different Allies. The SHAEF staff also divided the theater level fuel

59. D.J. Payton-Smith, *Oil: A Study of War-time Policy and Administration*, (London: Her Majesty's Stationery Office, 1971), 249–250.

60. D.J. Payton-Smith, *Oil: A Study of War-time Policy and Administration*, (London: Her Majesty's Stationery Office, 1971), 249–250.

61. U.S. Naval History Division, *Administrative History of U.S. Naval Forces in Europe, 1940–1946, Volume 5*, (London, 1946), 187–189.

supply chain into management areas. Figures 6 and 7 show the development of the regional supply areas between November 1944 and April 1945. The British area to the north provided fuel support to national and Allied forces operating within their zone, while the United States had responsibility for the southern zones. The LOCs mirrored these operational areas. Two of the routes came in from the western shores of Europe and the third developed from the Mediterranean with the entry of Allied forces from the south. SHAEF established extensive pipeline and truck route systems along these LOCs to move fuel forward as the Allied forces advanced east toward Germany. The SHAEF G4 section allocated theater petroleum based on the ability of LOCs to receive and transport supplies and based on the operational mission requirements.⁶² By September 1944, the capacity of the LOCs had reached their limits.

62. Roland G. Ruppenthal, *Logistical Support of the Armies: Volume II September 1944–1945*. (Washington: Center for Military History United States Army, 1995), 173.

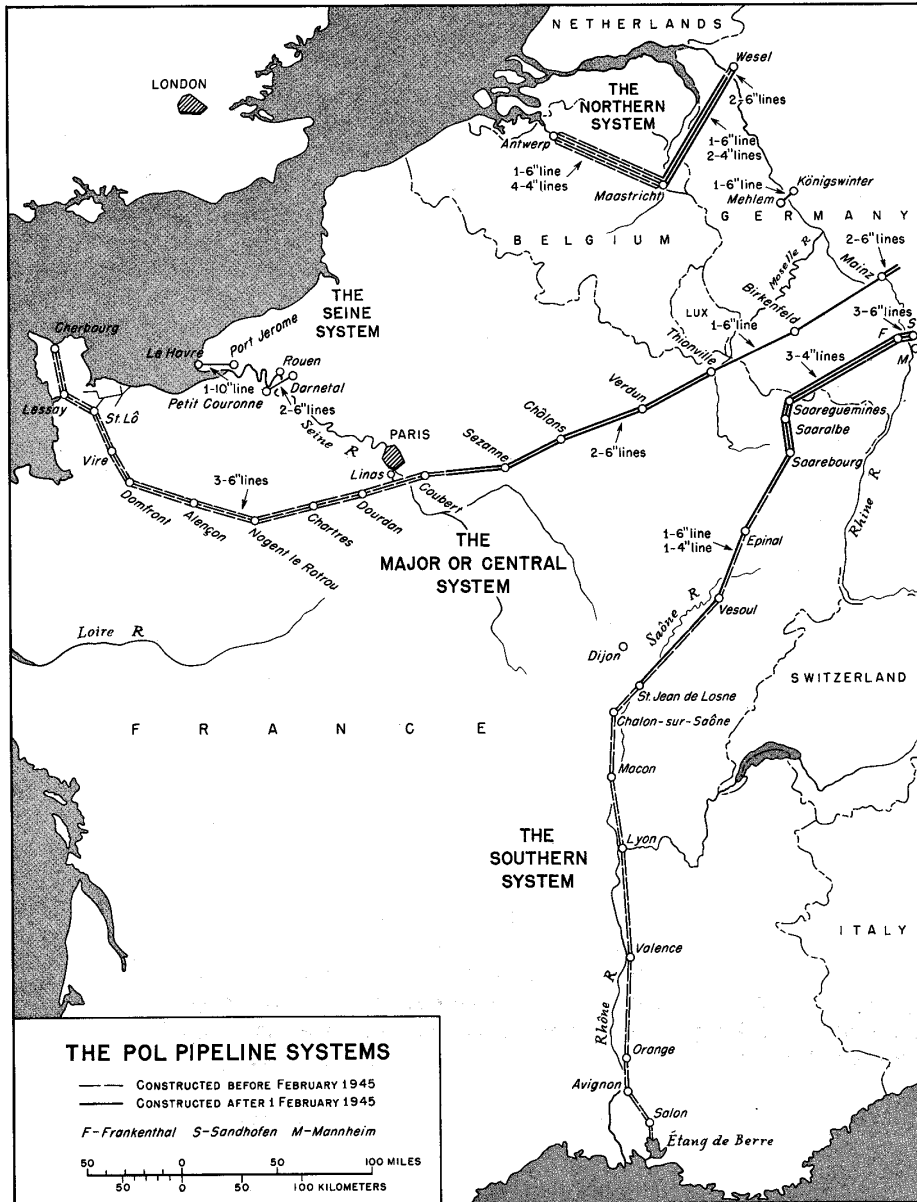


Figure 5. The WWII Petroleum Oil and Lubricants (POL) Pipeline Systems provides a good representation of the three main LOCs used to supply the Alliance with fuel.⁶³

63. From: Roland G. Ruppenthal, *Logistical Support of the Armies: Volume I May 1941–September 1944*. (Washington: Center for Military History United States Army, 1995), 436.



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Figure 6. The Communication Zone map shows how SHAEF G4 logistics staff initially divided the European theater of operations between national areas of responsibility and the internal divisions of the nations.⁶⁴

64. From: Roland G. Ruppenthal, *Logistical Support of the Armies: Volume II September 1944–1945*. (Washington: Center for Military History United States Army, 1995), 38.

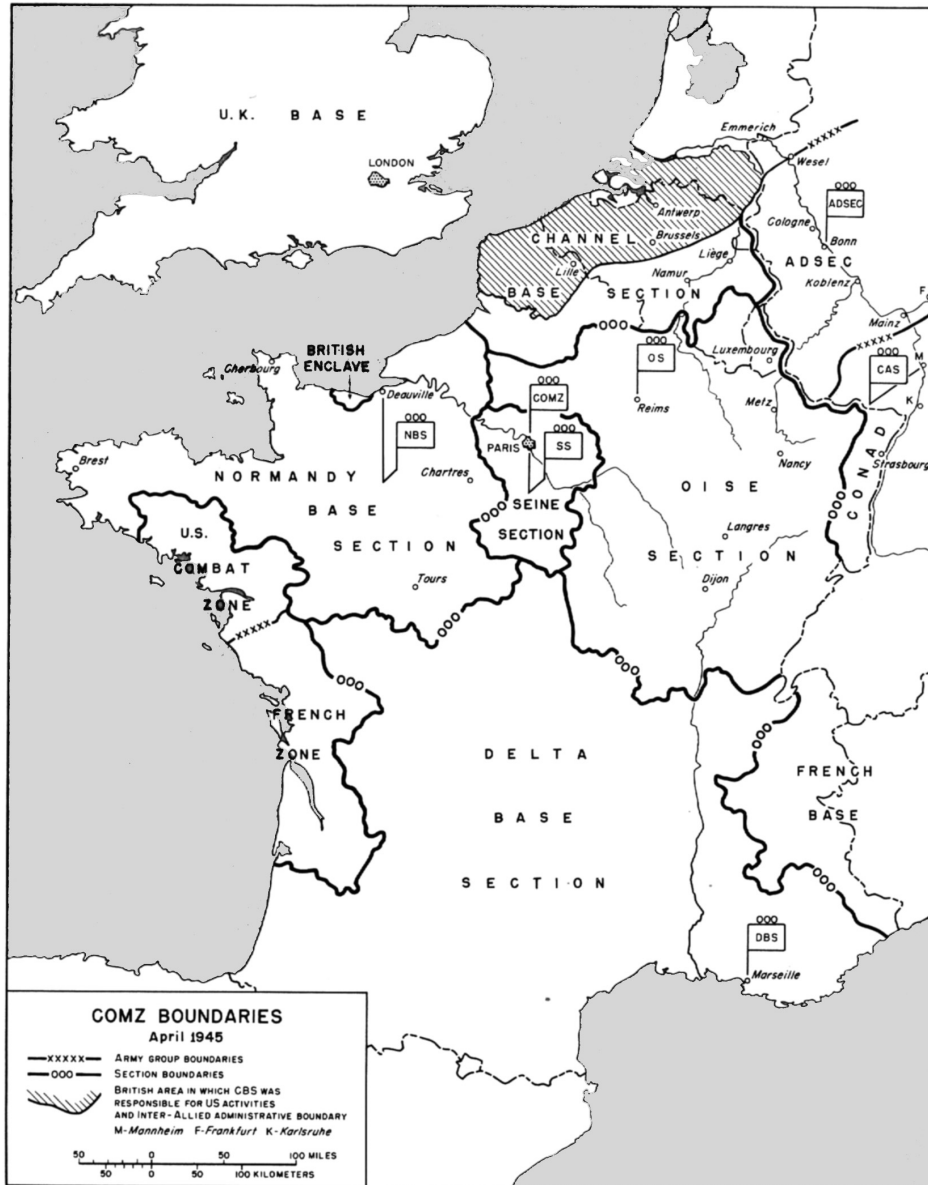


Figure 7. The April 1945 Communication Zone map depicts the final division of the European theater supply areas.⁶⁵

Limited transportation resources and infrastructure forced General Eisenhower to prioritize fuel allocation to Allied forces. Limited transportation hindered the Allied ability to clear the ports and move supplies of petroleum up the LOCs quickly enough to

65. From Roland G. Ruppenthal, *Logistical Support of the Armies: Volume II September 1944–1945*. (Washington: Center for Military History United States Army, 1995), 381.

match the pace of Allied operations.⁶⁶ General Eisenhower opted to supply the single northern thrust of Field Marshal Montgomery's Twenty-first Army Group and limited supply to General Bradley's U.S. 12th Army Group.⁶⁷ Regardless of his decision, however, the most significant factor was that SHAEF had the ability and authority to make such a decision. Because the Allied Combined Chiefs' of Staff provided General Eisenhower with proper logistical authorities, he was able to make such widely impacting decisions and effectively command a multinational force. General Eisenhower and the SHAEF staff had the ability to control multinational resources and the authority to command multinational forces to execute logistics in a wartime theater of operation.

During WWII, the United States and UK found it necessary to centralize their national fuel administrations in order to ensure adequate fuel supply to their forces and to continue the war effort. As the lead Allied nations, they were apprehensive of developing a single Allied petroleum office. This apprehension has remained a common theme with the creation of NATO. The divisive nature of Allied petroleum operations continued into NATO and fostered the development of independent national programs, none of which have been more important than or as large as the U.S. fuel operation. As the U.S. has served as lead nation in subsequent expeditionary multinational campaigns, the U.S. national fuel program has been the linchpin of NATO since its inception. With such an important role in the development of NATO, it is important to look more closely at U.S. fuel doctrine and fuel support operations in Afghanistan. This perspective will provide a better appreciation of the NATO fuel BOA as a creative departure from historical multinational procedures and from contemporary U.S. doctrine.

C. POST WWII U.S. DEFENSE FUEL SUPPORT

After WWII, the United States emerged as the single largest supplier of fuel to the Allied nations that would eventually form NATO. Among the lessons that the United States learned from WWII was that, in order to exercise effective fuel support to the

66. Roland G. Ruppenthal, *Logistical Support of the Armies: Volume II September 1944–1945*. (Washington: Center for Military History United States Army, 1995), 8–12.

67. Omar N. Bradley, *A Soldier's Story*, (New York: Random House Inc., 1999), 396–401.

national defense, it was necessary to centralize fuel procurement for the entire defense industry. The Army-Navy Petroleum board was aligned under the U.S. Chiefs' of Staff and had the primary mission of meeting fuel requirements of U.S. forces during WWII. In 1945, the organization was renamed the Joint Army-Navy Purchasing Agency and realigned under the U.S. War Department. Providing fuel to U.S. forces has remained a responsibility of the U.S. DoD, but the organization charged with that responsibility has evolved. In the early 1960s, the fuel supply organization that would someday become the Defense Logistics Agency-Energy became part of the larger logistics organization known as the Defense Logistics Agency.⁶⁸

The Defense Logistics Agency (DLA) is an agency of the U.S. DoD and is under the purview of the Under Secretary of Defense for Acquisition, Technology, and Logistics. DLA is the primary provider of supplies and logistics to the DoD, and supplies the U.S. armed forces with nearly all of its consumable items required in peace and war, such as food, supplies, equipment and fuel.⁶⁹ As such, DLA is the DoD's executive agent and integrated material manager for bulk petroleum, although it delegates those responsibilities to DLA Energy.⁷⁰ DLA Energy is a primary-level field activity of DLA, and is charged with providing the DoD with "effective and efficient energy solutions."⁷¹

DLA Energy manages the bulk petroleum supply chain from the source of supply to the point of customer acceptance and everything in between. As integrated material manager for bulk fuels, DLA Energy's responsibilities include "consolidation and review of bulk petroleum requirements, procurement, funding, budgeting, storage and designated distribution of bulk petroleum" to meet the combatant commander's operational requirements.⁷² DLA Energy provides the DoD with its entire fuel supply, which makes

68. Defense Logistics Agency, "Command History," accessed June 11, 2012, <https://www.desc.dla.mil/DCM/DCMPage.asp?LinkID=DESCHISTORY>.

69. Defense Logistics Agency, "DLA at a Glance," accessed May 4, 2012, <http://www.dla.mil/Pages/ata glance.aspx>.

70. Department of Defense Directive 5101.8, "DoD Executive Agent (DoD EA) for Bulk Petroleum," August 11, 2004.

71. Defense Logistics Agency Energy, "Mission Statement," accessed May 4, 2012, <http://www.desc.dla.mil/DCM/DCMPage.asp?LinkID=DESCINTRO>.

72. Chairman of the Joint Chiefs of Staff of the United States, Joint Publication 4-03, *Joint Bulk Petroleum and Water Doctrine*, December 9, 2010, II-2.

it the world's single largest procurer of fuel.⁷³ Buying bulk fuel for the entire DoD gives DLA Energy buying power and enables it to offer fuel at lower and more consistent prices. In FY 2011, DLA Energy procured 129.5M barrels of fuel and had net sales of \$19.1B to DoD customers.⁷⁴ As of June 1, 2012, the average cost of fuel sold by DLA Energy was \$3.60 per gallon.⁷⁵

1. DoD/DLA Concept of Operations

This section will describe DoD/DLA doctrinal bulk fuel operations, DLA Energy's management of the bulk fuel supply chain, and DLA Energy's bulk fuel support to U.S. forces in Afghanistan during Operation Enduring Freedom (OEF). DLA Energy procures and stages common bulk fuel products for the combatant commands through an interdependent partnership with other government entities and the military services in theater. In order to accomplish its mission, DLA Energy must determine customer requirements, find strategic-level fuel sources, and provide transportation, storage, and distribution of bulk fuels.

a. Determining Theater Fuel Support Requirements

Although DLA Energy procures and stages bulk fuel for operations in theater, it is the geographic combatant commander who is responsible for planning, executing and controlling bulk fuel operations and distribution throughout his area of operations. The joint petroleum office (JPO) is the combatant commander's fuel manager, and is "responsible for the overall planning of petroleum logistic support for joint operations within the assigned AOR [area of responsibility]."⁷⁶ Depending on the size and complexity of the operating area, a sub-area petroleum office (SAPO) may exist

73. P.W. Singer and Jerry Warner, "Fueling the Balance": A Defense Energy Strategy Primer," *Brookings Institution*, August 2009, accessed, May 21 2012, http://www.brookings.edu/~media/research/files/papers/2009/8/defense%20strategy%20singer/08_defense_strategy_singer.pdf.

74. Defense Logistics Agency Energy, "Factbook: Fiscal Year 2011," 26–27, accessed May, 24 2012, <http://www.desc.dla.mil/dcm/files/Fact%20Book%20FY2011%20web%20e-mail.pdf>.

75. Defense Logistics Agency Energy, "FY 2012 Standard Prices," accessed June 4, 2012, http://www.desc.dla.mil/dcm/files/JuneFY12_LongList_%28151%2020%29%20%2812%29.pdf.

76. Chairman of the Joint Chiefs of Staff of the United States Joint Publication 4-03, *Joint Bulk Petroleum and Water Doctrine*, December 9, 2010, III-1.

at an echelon below the JPO. The SAPO focuses on support for each service component and is responsible for “bulk petroleum planning and execution matters within its operational area.”⁷⁷ Each service component determines its operational fuel requirements based on historical usage and planned rotations, and submits it to the JPO or SAPO. The JPO will then validate the service requirements for before providing them to DLA Energy for analysis, planning, and sourcing.⁷⁸ JPO or SAPO must also assess the capabilities and requirements of Allies and coalition partners, and must integrate those assessments into appropriate plans and operations.⁷⁹

b. Strategic-level Fuel Sourcing and Contracting

DLA Energy procures bulk fuel for use by DoD components and apportions its fuel either for: immediate operational use (bulk storage and distribution in theater); peacetime operating stocks; or petroleum war reserve requirements. Peacetime operating stocks and petroleum war reserve requirements can be drawn from in order to begin operations in a new theater of conflict while the services establish fuel operations, or to augment bulk fuel supplies as needed during a conflict. Once robust fuel operations can be maintained, bulk fuel storage sites in theater are drawn from to provide fuel to U.S. forces throughout the area of operations. The majority of the fuel DLA Energy provides to the services is JP-8 jet fuel, although it also provides JP-5 jet fuel to the U.S. Navy, as well as diesel fuel to all the Services.⁸⁰ Although DLA Energy is postured to supply bulk fuel and energy needs to combatant commanders worldwide, DoD policy

77. Chairman of the Joint Chiefs of Staff of the United States Joint Publication 4-03, *Joint Bulk Petroleum and Water Doctrine*, December 9, 2010, III-7.

78. Chairman of the Joint Chiefs of Staff of the United States Joint Publication 4-03, *Joint Bulk Petroleum and Water Doctrine*, December 9, 2010, I-3.

79. Chairman of the Joint Chiefs of Staff of the United States Joint Publication 4-03, *Joint Bulk Petroleum and Water Doctrine*, December 9, 2010, IV-3.

80. Anthony Andrews, “Department of Defense Fuel Spending, Supply, Acquisition, and Policy,” Washington, D.C.: Congressional Research Service, September 22, 2009, 2.

directs the Services to “make maximum use of commercial and host-nation sources of supply to meet peacetime and wartime requirements” in order to offset U.S. requirements and costs.⁸¹

After receiving validated customer requirements, DLA Energy solicits proposals from suppliers and evaluates bids, seeking the lowest total cost to the government. The most competitive bids are awarded indefinite delivery/indefinite quantity contracts in which contractors are bound to provide an indefinite quantity of fuel during a fixed period.⁸² DLA Energy uses firm fixed price contracts with an economic price adjustment (commonly referred to as FFP-EPA) that “provides for upward and downward revision of the stated contract price upon the occurrence of specified contingencies.”⁸³ DLA Energy “sets the standard price, for the current FY [fiscal year], based off of the previous 18-month price history and not the current standard price for fuel...in an attempt to shield the DoD from the price fluctuations that occur with the price of fuel on a daily basis.”⁸⁴ In 2011, DLA Energy awarded 6,669 contracts worth \$15.2B.⁸⁵

c. Transportation, Storage and Distribution

Once DLA Energy procures bulk fuel, its contractors transport the fuel from refineries to strategic storage points and bulk storage facilities in active theaters of operation throughout the world. Once the bulk fuel has reached the theater, it may be maintained in bulk storage or immediately distributed to the customer. DLA Energy owns and tracks fuel up to the point of sale, at which time the fuel may be “placed directly into

81. Department of Defense Directive 4140.25, “DoD Management Policy for Energy Commodities and Related Services,” April 12, 2004.

82. Henry Canaday, “Energy Expertise,” *Military Logistics Forum* 6, no 5, 14 (June 2012), accessed June 11, 2012, http://www.kmimediagroup.com/files/MLF_6-5%20Final%281%29.pdf.

83. Anthony Andrews, “Department of Defense Fuel Spending, Supply, Acquisition, and Policy,” Congressional Research Service, September 22, 2009, 15–16.

84. Sean R. Dubbs, “Estimating the Fully Burdened Cost of Fuel Using an Input-Output Model: A Micro-Level Analysis,” (Master’s Thesis. Monterey, CA: Naval Postgraduate School, September 2011): 10.

85. Defense Logistics Agency Energy, “Factbook: Fiscal Year 2011,” 26–27, accessed May 24, 2012, <http://www.desc.dla.mil/dcm/files/Fact%20Book%20FY2011%20web%20e-mail.pdf>.

a weapons system or a battlefield storage unit or handed off to the customer to move to a forward-deployed location.”⁸⁶ The most common methods of moving bulk fuel around the operational environment are (from most to least efficient) by pipeline, tanker/barge on inland waterways, railway, airlift and truck.

The degree of control that DLA Energy manages over the fuel supply chain varies and is determined by where the point of sale or customer acceptance lies along that chain. Doctrinally, DLA Energy delivers bulk fuel to centralized bulk storage sites in theater from which ground-based DoD customers draw and further distribute fuel to subordinate units throughout the theater of operation. In this example, DLA Energy’s control of the supply chain ends at the bulk storage site. The customer may be a battalion or company-level element that accepts the fuel product at the bulk storage site to distribute to subordinate units in the field or at a FOB. In contrast, many recent DLA Energy contracts in Afghanistan require fuel to be transported directly from refineries and distributed all the way to DoD customers at remote FOBs. Because customer acceptance moved to the end-user at the FOB, DLA Energy relinquished control of a majority of the supply chain to contractors and has begun to encroach on the military Services’ areas of responsibility in bulk fuel distribution.

Service doctrine holds that the theater sustainment command is responsible for scheduling transportation and distribution of fuel from the sustainment base or intermediate theater bulk storage to tactical ground-based customers. The theater sustainment command, normally a U.S. Army activity, plans distribution based on customer demand, available distribution assets, permissiveness of the operating environment and available storage.⁸⁷ Fuel is moved by the theater sustainment command from the sustainment base either via pipeline or truck, and is distributed to airfields or brigade-sized elements at forward sustainment bases. Fuel is then moved by truck for

86. Andrew R. Schlossberg, “The Military Dimensions of Post-Cold War U.S. Oil Policy: Access to Oil and Consequences for Geostrategy,” (Student Thesis. Philadelphia, PA: University of Pennsylvania. April, 2011): 34.

87. Chairman of the Joint Chiefs of Staff of the United States Joint Publication 4-03, *Joint Bulk Petroleum and Water Doctrine*, December 9, 2010, IV-2.

distribution to battalion and company sized elements. Figure 8 depicts typical ground-based fuel transportation and distribution methods.

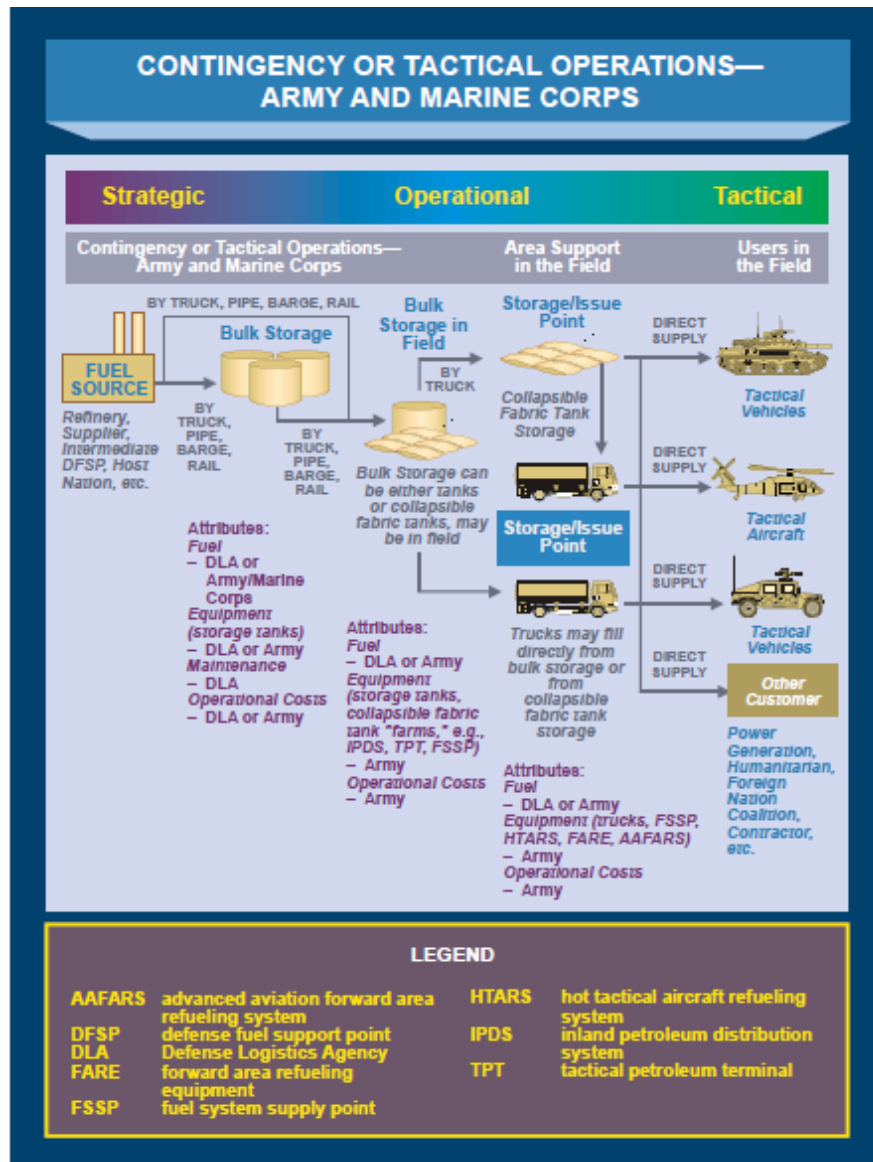


Figure 8. U.S. Ground Based Fuel Distribution: From Strategic Requirements to Tactical Customers.⁸⁸

88. From: Joint Publication 4-03, *Joint Bulk Petroleum and Water Doctrine*, December 2010.

2. DLA Energy–Operation Enduring Freedom

Since 2001, when the United States began OEF in Afghanistan, DLA Energy has shouldered a greater responsibility in meeting steadily growing fuel support requirements to U.S. forces. Afghanistan is widely considered to be the most difficult operating environment in which to move supplies. Although DLA Energy adheres to general doctrinal operating requirements, moving fuel across Afghanistan’s difficult LOCs presents additional challenges to U.S. logistics partners that require unique solutions. The following section will provide greater detail on DLA Energy and DoD fuel operations in Afghanistan.

a. Determining Theater Fuel Support Requirements–OEF

DLA Energy-Middle East is charged with supporting the fuel requirements to U.S. and supported Allied forces in the U.S. Central Command (USCENTCOM) area of responsibility.⁸⁹ DLA Energy-Middle East, which is located in Bahrain, receives validated requirements from the USCENTCOM JPO at MacDill AFB, FL. The JPO validates the customer requirements it receives from the Joint Logistics Command at Bagram Airfield.⁹⁰ The Joint Logistics Command Class III (fuels) office serves as the SAPO in Afghanistan. Its responsibilities include consolidating the services’ fuel requirements, liaising with DLA Energy-Middle East regarding bulk petroleum supply and infrastructure issues, as well as theater distribution planning and management. At its highest demand in 2009, DoD customers in OEF had a storage requirement of 30 million gallons, and required 1.1 million gallons of fuel per day to support operations.⁹¹

89. Defense Logistics Agency Energy, “Factbook: Fiscal Year 2011,” 21, accessed June 1, 2012, <http://www.desc.dla.mil/dcm/files/Fact%20Book%20FY2011%20web%20e-mail.pdf>.

90. John Faust, “Bulk Petroleum Challenges in Afghanistan,” *Quartermaster Professional Bulletin*. (Spring 2007): 23.

91. Jeffrey B. Carra and David Ray, “Evolution of Petroleum Support in the U.S. Central Command Area of Responsibility,” *Army Sustainment* 42, no 5 (September-October 2010) accessed June 4, 2012, http://www.almc.army.mil/alog/issues/SepOct10/petrol_support.html.

b. Strategic-level Fuel Sourcing and Contracting—OEF

Afghanistan has no petroleum refineries; therefore 100 per cent of bulk fuel is imported. In order to support the Services' requirements, DLA Energy-Middle East awarded contracts to several companies in Pakistan and Central Asia, including Red Star Enterprises Limited and Supreme Fuels Trading FZE, among others.⁹² The contractors were required to deliver bulk fuel to the major bulk fuel hubs in Afghanistan, from which the services would further distribute fuel to forward units in tactical fuel delivery trucks. DLA Energy began to award contracts that would encompass the entire supply chain, and U.S. forces began to depend on contractors to drive beyond the major bulk fuel hubs and deliver fuel to end-users at remote FOBs. Prior to this initiative, the Services either delivered fuel from the bulk storage hubs to subordinate units and FOBs, or it tendered its own contracts for fuel support.

c. Transportation, Storage and Distribution—OEF

Once DLA Energy procures the required bulk fuel, the challenge of transporting it through Afghanistan's treacherous LOCs begins. Fuel is delivered to Afghanistan along two routes. Until 2009, the majority of fuel was trucked in from Pakistan through the dangerous Khyber and Salang Mountain passes along the southern LOCs. Since then, fuel traffic has shifted to the Northern Distribution Network, where more than 70 percent of fuel is shipped over 1,000 miles by rail and truck from refineries in Turkmenistan.⁹³ Most bulk fuel in Afghanistan is stored in two major bulk fuel storage hubs: Bagram Airfield in the north, and Kandahar Airfield in the south.⁹⁴ In 2006, DLA Energy contracted to build an additional 50,000 barrel capacity storage tank in Kabul to hedge against delayed deliveries.⁹⁵ It can take up to two weeks for bulk fuel to travel

92. Henry Canaday, "Energy Expertise," *Military Logistics Forum* 6, no 5, 14 (June 2012), accessed June 11, 2012, http://www.kmimediagroup.com/files/MLF_6-5%20Final%281%29.pdf.

93. Jeffrey B. Carra and David Ray. "Evolution of Petroleum Support in the U.S. Central Command Area of Responsibility," *Army Sustainment* 42, no 5, (September-October 2010) accessed June 4, 2012, http://www.almc.army.mil/alog/issues/SepOct10/petrol_support.html.

94. John Faust, "Bulk Petroleum Challenges in Afghanistan," *Quartermaster Professional Bulletin*, (Spring 2007): 23.

95. Susan Declerq Brown, "DESC Fuels the Warfighter: Meeting the Challenges of Establishing Facilities and Tracking Capitalized Fuel in Austere Environments," *Fuel Line*, 1 (January 2006): 6.

from its origin to the bulk fuel storage hubs, and as long as 12 days to reach the most remote FOBs from the bulk fuel hubs.⁹⁶ According to the Director of DLA, supplying U.S. forces over the harsh Afghan terrain has been “the most difficult logistics assignment we have faced since World War II.”⁹⁷ Figure 9 illustrates the routes of travel for bulk fuel into Afghanistan.



Figure 9. Central Asian Fuel LOCs.⁹⁸

96. John Faust, “Bulk Petroleum Challenges in Afghanistan,” *Quartermaster Professional Bulletin* (Spring 2007): 24.

97. Steven Mufson and Walter Pincus. “Major Challenge for Pentagon is Getting Fuel to U.S. Troops in Afghanistan,” *Washington Post*, December 15, 2009, accessed July 9, 2012. <http://www.washingtonpost.com/wp-dyn/content/article/2009/12/14/AR2009121403123.html>.

98. From: Jeffrey B. Carra and David Ray, “Evolution of Petroleum Support in the U.S. Central Command Area of Responsibility,” *Army Sustainment* 42, no 5 (September-October 2010) accessed June 4, 2012, http://www.almc.army.mil/alog/issues/SepOct10/petrol_support.html.

In 2008, USCENTCOM had to consider the fuel support needs that would accompany the planned 2009 troop surge. Instead of provisioning its own forces, USCENTCOM decided to partner with ISAF and leverage the NATO fuel BOA to support U.S. forces in RC South and West.⁹⁹ Not only did the United States wish to show its support as a partner within the Alliance, it was also in its best interest to take advantage of the agreement that was already in place to deliver fuel to remote FOBs.¹⁰⁰ By relying more on fuel support through the NATO fuel BOA, the United States could reduce the number of support personnel and increase the number of combat forces on the battlefield. Key U.S. personnel on the NATO ISAF fuel team at JFC HQ Brunssum reassured the USCENTCOM J4 senior logistics officer that the NATO fuel BOAs could meet the additional U.S. fuel requirements.¹⁰¹

D. NATO FUEL BOA SUPPORT TO ISAF

In the early days of NATO, General Eisenhower's SHAEF command failed to capitalize on his great partnership-building and leadership capabilities. Field Marshal Montgomery was one of the few senior Allied leaders who made the transition from WWII Alliance structure into the NATO structure. He served as the first Deputy Supreme Commander of the Supreme Headquarters Allied Power Europe. Montgomery describes how General Eisenhower tried from the very outset to rebuild the WWII level of cooperation into Supreme Headquarters Allied Power Europe. He was determined that the staff would be international and inter-service, and that they would forego particular national or service-specific political agendas. However, the best-laid intentions met with

99. Jeffrey B. Carra and David Ray, "Evolution of Petroleum Support in the U.S. Central Command Area of Responsibility," *Army Sustainment* 42, no 5 (September-October 2010) accessed June 4, 2012, http://www.almc.army.mil/alog/issues/SepOct10/petrol_support.html.

100. Jeffrey B. Carra and David Ray, "Evolution of Petroleum Support in the U.S. Central Command Area of Responsibility," *Army Sustainment* 42, no 5 (September-October 2010) accessed June 4, 2012, http://www.almc.army.mil/alog/issues/SepOct10/petrol_support.html.; In addition, Department of Defense Directive 2010.8, "Department of Defense Policy for NATO Logistics," states: "as stated in NATO MC 36/2 (ref b) that, while each nation is responsible for the logistic support of its own forces, the [U.S.] encourages mutual provision of such support among NATO nations."

101. Colonel U.S. Army Jeffery B. Carra (Commander, 165th Quartermaster Group (POL), Fort Belvoir, VA and Camp Arifjan, Kuwait (2006–2009); Chief, Iraq Sub-Area Petroleum Office 2008–2009; Chief, Afghanistan Sub-Area Petroleum Office 2008–2009; Chief, Joint Petroleum Office, U.S. Central Command (2009–2010)), interviewed by Michael Evans, July 2, 2012, Interview Carra.mp3, Evans Private Oral History Collection.

resistance from the reality of western politics.¹⁰² Field Marshal Montgomery most adeptly captured the nature of NATO when he wrote:

National sensitivity is the trouble, and this is a great bar to progress. A further trouble in the realm of defense is that the nations don't trust each other; no nation is willing to be dependent on another nation in the Alliance. There is no doubt that when the threat of war lessened and fear began to disappear, Western unity began to weaken.

It will be clear from what I have said that NATO is an organization in which there is a tremendous waste of money and effort, and a great deal of unnecessary duplication. Much of the thinking is muddled and confused. The global aspect of defense is disregarded. Defense problems have got into the hands of Foreign Ministers; these know little about the subject, and, furthermore, they are not responsible for defense.¹⁰³

Montgomery's writings could easily be written in any journal today. In his review of U.S. General (retired) Wesley K. Clark's *Waging Modern War*, Richard Betts reminiscent of a Montgomery, captures a modern NATO commander/writer's critique of NATO:

After half a century of unprecedented institutionalized cooperation in peace-time planning for war, NATO's first actual war was initiated, fought, and ended with no agreement among its members -- or within the councils of its single most important member, the United States -- on objectives, strategy, or limits of action.¹⁰⁴

General Clark himself wrote:

Unity of command was nominally through my headquarters, but in practice national command chains continued to shape and drive the campaign through connections directly to NATO-assigned forces and sometimes bypassing NATO, including in the negotiations to end the fighting. Even within my U.S. chain of command, my subordinate component commanders were reporting to, and no doubt influenced by, members of a committee in Washington composed of the four Service

102. Bernard Law Montgomery, *The Memoirs of Field-Marshal the Viscount Montgomery of Alamein, K.G.*, (Cleveland: The World Publishing Company, 1958), 460–461.

103. Bernard Law Montgomery, *The Memoirs of Field-Marshal the Viscount Montgomery of Alamein, K.G.*, (Cleveland: The World Publishing Company, 1958), 469.

104. Richard K. Betts, "Compromised Command: Inside NATO's First War," *Foreign Policy* (July/August 2001).

Chiefs, the Chairman and the Vice Chairman of the Joint Chiefs of Staff. And because there was no pre-arranged strategy, unity of effort suffered.¹⁰⁵

Montgomery's and Clarks' critiques were aimed at the divided system of controls and duplicated efforts of the NATO logistics establishment.

The early political struggles of a young NATO would help create a system where the Alliance focused inwardly on defense of Western Europe. NATO built its logistics structure around a western defense and failed to develop an appreciation for the global nature of collective defense it would need in the future. Each Alliance nation developed its own system of logistics and formed NATO policies that reflected these separate national mentalities. But, as discussed in Chapter II, the end of the Cold War brought a reshaping of NATO. In the mid-1990s, national leaders and NATO logisticians began developing policies that would encourage collective action in multinational operations that looked beyond the Alliance's geographic borders. In the 1990s, few nations other than the United States had either the military or the economic capacity to undertake expeditionary operations on a large scale. In addition, the NATO structures were not ready to execute successful operations abroad. From the inception of NATO operations in Afghanistan, the Alliance had to depend heavily on U.S. logistics for fuel support. When the United States diverted its attention to operations in Iraq in 2005, the Alliance had no backup national system. This seemingly dangerous turn of events was actually beneficial for the ISAF Commander, as it unwittingly allowed for a political consolidation of power under one Allied leader and his combined staff.

When NATO fuel logisticians developed the BOA in 2005 to fill the gap where national programs would not support Alliance operations, the ISAF command position was held by the United States. In 2008, that same flag position was also designated the Commander of U.S. Forces in Afghanistan.¹⁰⁶ Unlike the WWII petroleum supply chain,

105. Wesley K. Clark, *Waging Modern War: Bosnia, Kosovo and the Future of Combat*, (New York: Public Affairs, 2001), 424.

106. "Defense Department Activates U.S. Forces-Afghanistan," U.S. Department of Defense Office of the Assistant Secretary of Defense (Public Affairs) News Release No. 846-08, October 6, 2008, accessed June 30, 2012, <http://www.defense.gov/Releases/Release.aspx?ReleaseID=12267>.

NATO ISAF fuel operations were free from a higher-level tier of national administrative functions. With this freedom and the new dual authority, the ISAF Commander effectively controlled the majority of the ISAF fuel supply chain through DLA Energy, USCENTCOM theater petroleum related assets and distribution systems, and the NATO fuel BOA.

While the ISAF Commander's unique position did not allow for complete control over Alliance forces and operations, he did hold an unprecedented level of control over its fuel. Through the NATO chain of command, NATO ISAF fuel operations were managed through the theater logistics staff at HQ ISAF. With the establishment of the ISAF Joint Command (IJC) in 2009, NATO ISAF fuel operations were transferred to the IJC.¹⁰⁷ In coordination with the NATO regional commands' fuel officers, the IJC fuel staff consolidated NATO requirements for sourcing by the JFC HQ Brunssum fuel staff through the NATO fuel BOAs. In the U.S. Forces in Afghanistan chain of command, the Afghanistan SAPO, in coordination with the theater sustainment command, established U.S. fuel requirements for sourcing by the USCENTCOM JPO through DLA Energy. To coordinate this dual effort, the United States took the lead by establishing a series of key liaison relationships within the NATO chain of command.

The liaison role developed because the NATO and U.S. chains of command remained distinct. At the highest level, DLA Energy sent a permanent senior advisor to augment and coordinate with the JFC HQ Brunssum fuel staff. The presence of a U.S. logistics officer as the JFC HQ Brunssum Fuel Chief further enhanced coordination efforts. The DLA Energy liaison and U.S. Fuel Chief provided NATO access to weekly meetings and other U.S. classified systems that allowed high-level information flow between NATO and U.S. logisticians. Within the theater, USCENTCOM provided a liaison to the IJC fuel staff again providing the necessary information flow and coordination to direct fuel operations. Ultimately both chains of command focused fuel logistics efforts to meet the requirements of the ISAF Commander with minimal duplication of effort.

107. Lt. Gen Rodriguez comment, "What is the ISAF Joint Command?," *ISAF Blog*, accessed June 30, 2012, <http://www.isaf.nato.int/the-afghan-hands-blog/commanders-blog/lt.-gen.-rodriguez-what-is-the-isaf-joint-command.html>.

Early ISAF fuel operations were very much stovepiped and duplicated efforts. As the theater matured and the ISAF Commander consolidated his control over fuel, fuel operations became much more focused and efficient. As in WWII, the NATO and U.S. logisticians agreed to divide fuel operations regionally to no longer duplicate efforts. The U.S. supported fuel operations in Regional Command (RC) East and portions of RC North, while NATO supported fuel operations in RC West, RC Southwest, RC South, portions of RC North, and Kabul International Airport. The German government remained separate from NATO and U.S. fuel operations, and supported their forces, and some Alliance members, at Mazar-E-Sharif in RC North. Because LOCs to Afghanistan proved challenging, the United States and NATO developed two major LOCs with one from the north and the other from the south.

The two LOCs represented the only politically acceptable approaches into Afghanistan for the United States and NATO. Because the BOA required alternate suppliers and alternate routes, NATO opened a northern supply route into Afghanistan long before the U.S. DoD created the Northern Distribution Network in 2009.¹⁰⁸ From the outset, NATO contractors moved seventy percent of all contracted fuel through the northern LOC. At its greatest length, the northern LOC reached back as far as the U.S. Gulf Coast. The southern LOC reached just as far but traversed through Pakistan and presented the largest problem for both the United States and NATO logisticians. The southern LOC remained open until 2011, when Pakistani officials closed the route indefinitely after one of their border outposts was attacked during an ISAF operation.¹⁰⁹ In the south, fuel contractors faced opposition from anti-NATO/U.S. forces operating in Pakistan, the Government of Pakistan, RC South, RC Southwest, and RC East. And like their WWII counterparts, the contractors continued to move fuel despite of the heavy

108. Joint Force Command Headquarters Brunssum, "Statement of Work (SOW) for the Provision of Aviation & Ground Fuels for NATO ISAF Herat, Afghanistan," February 1, 2006, 1.; Joint Force Command Headquarters Brunssum, "Statement of Work (SOW) for the Provision of Aviation & Ground Fuels for NATO ISAF Kandahar Airfield, Afghanistan," August 3, 2007, 1.; Joint Force Command Headquarters Brunssum, "Statement of Work (SOW) for the Provision of Aviation & Ground Fuels for NATO ISAF Kabul International Airfield (KAIA), Afghanistan," July 25, 2007, 1.

109. Jasmine Coleman, "Pakistan Halts NATO Supplies After Attack Leaves Soldiers Dead," *The Guardian*, November 26, 2011, accessed June 30, 2012, <http://www.guardian.co.uk/world/2011/nov/26/pakistan-halts-nato-supplies-attack>. Note: as of 5 July 2012, the border crossing between Afghanistan and Pakistan had been reopened.

attacks on their convoys. Table 3 provides conservative estimates of ISAF-related contractors' casualties and injuries. Figure 10 and 11 detail the NATO fuel BOA related incidents and difficult LOCs.

	Fatalities	Other Work Related Compensations	Total
Iraq	1,569	46,074	47,643
Afghanistan	1,173	16,658	17,831
Pakistan	20	150	170
Kuwait	64	6,245	6,309
UAE	9	414	423
Qatar	10	383	393
Jordan	25	166	191
Saudi Arabia	16	130	146
Oman	1	107	108
Bahrain	1	77	78
Turkey	4	47	51
Russian Federation	1	52	53
Uzbekistan	6	48	54
Kyrgyzstan	1	35	36
Tajikistan	2	3	5
Kazakhstan	0	21	21
Ukraine	0	12	12
Turkmenistan	0	1	1
Total	2,902	70,623	73,525

Table 3. U.S. Department of Labor Data on Reported Contractor Incidents: September 2001–June 2012.¹¹⁰

110. After: Department of Labor, Division of Longshore and Harbor Workers' Compensation, "Defense Base Act Cumulative Report by Nation (09/01/2001–06/30/2012) Summary," accessed August 9, 2012, <http://www.dol.gov/owcp/dlhwc/dbaallnation.htm>. NOTE: Because of the poor track record of U.S. Government reporting and the ignorance of many third country nations who do not know their rights in work related incidents, the Department of Labor includes this disclaimer for the data provided in Table 3: "These reports do not constitute the complete or official casualty statistics of civilian contractor injuries and deaths. They are offered as general information to the public who may be interested in the scope of civilian government contracting overseas." The Wartime Commission on Contracting also noted that many cases are not documented and so this data represents a low estimate of contractor related incidents and death, see their final report to the U.S. Congress, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, August 2011, 31.

Incidents Civilians Escort to NATO Contractors Fuel Convoys

<u>Incident</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
KIA	98	119	103	110	2
WIA	169	267	329	257	15
Vehicles Destroyed	48	63	140	168	3
Vehicles Damaged	121	269	358	284	16



Figure 10. NATO Fuel BOA Incident Report Summary 2008–May 2012.¹¹¹

111. From: Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) “Fuel Concept on ISAF,” (Presentation to the Senior NATO Logisticians’ for ISAF, Brunssum, The Netherlands, May 15, 2012).

GLOC difficulties



Figure 11. NATO Fuel BOA Examples of Afghanistan's LOCs.¹¹²

The southern LOC routinely experienced closures that inspired ISAF commanders to prepare for significant disruptions to this route. When U.S. General Stanley A. McChrystal took command of ISAF in 2009, he prepared strategically to mitigate the impact of disruptions to the southern LOC. He directed that an additional 30 day supply of fuel be stored within Afghanistan, bringing the total supply to 60 days. With Alliance forces using more than 6 million liters of fuel a day, this meant that a total of more than 400 million liters had to be held in reserve. While there was an initial cry of distress from NATO and U.S. logisticians, they quickly developed and executed a combined logistics plan before the year's end to meet the ISAF Commander's requirement. NATO nations expressed concerns about this additional requirement, but they held no political power in

112. From: Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) "Fuel Concept on ISAF," (Presentation to the Senior NATO Logisticians' for ISAF, Brunssum, The Netherlands, May 15, 2012).

the decision. Only Germany continued to provide fuel to their forces and so maintained separate policies consistent with their national interests.¹¹³ When Pakistan closed the southern LOC in 2011, the additional reserve proved to be critical. This allowed the United States and NATO to shift their operations to the northern LOC over a series of months while providing minimal disruption to ISAF operations. The ISAF Commander's ability to make such large decisions speaks to the effectiveness of ISAF's multinational fuel operation.

E. CONCLUSION

WWII brought together an alliance of western nations to fight common enemies around the world. This war marked a clear turn in the primacy of petroleum on the modern battlefield. To support their forces with the necessary fuel, the United States and the UK centralized their fuel industry and developed massive logistics systems on the national and theater level; however, political underpinnings prohibited formation of an Allied logistics structure and kept their nation's organizations separate. A liaison relationship would tie the two nations' petroleum programs together in order to provide fuel to SHAEF's European theater of operations. The extraordinary powers granted through the Allied Combined Chiefs of Staff allowed General Eisenhower to effectively manage a multinational force and its petroleum supply chain.

As the western Alliance came out of WWII and transitioned into NATO, much of these powers were lost. Political machinations fostered NATO logistics policy that would duplicate efforts across the member nations' separate logistics systems. Alliance politics did not allow for the development of adequate expeditionary capabilities. It was not until the end of the Cold War that Alliance logisticians began to reshape policy that enabled them to work toward a common system of collective operations. Years of neglect in expeditionary operations were difficult to correct quickly, and were further exacerbated by nations who were unwilling or incapable of operating beyond their borders.

113. The majority of the information pertaining to the 60 Days of Supply (DOS) policy and the ISAF Fuel Plan remains classified within U.S. and NATO record systems. The information provided here is unclassified and drawn from personal experiences while on General McKiernan's and McCrystal's logistics staff at HQ ISAF (2009) and later during my time in the policy and plans section of the JFC Brunssum fuel staff (2010–2011). M.Evans.

U.S. DLA Energy emerged from the WWII petroleum establishment to become the leader in world fuel operations and key to NATO's ability to go abroad. This support to the Alliance became a type of crutch that hindered NATO's development of an organic expeditionary fuel capacity. When the United States no longer supported the broader ISAF mission with fuel in 2005, NATO logisticians were unable to turn to another role specialist nation and they had no organic expeditionary fuel organization. Although NATO was seemingly disadvantaged with the departure of the United States, it would actually push NATO logisticians to develop a creative solution to their fuel supply problem. NATO moved to a contract-like solution that developed into the NATO fuel BOA. The BOA allowed NATO to act as its own role specialist nation separate from any nation's control. When the ISAF Commander also took on the U.S. Forces Afghanistan Command, a new opportunity within the fuels community presented itself. For the first time since WWII, an Allied commander exercised the necessary command authority to effectively manage the wartime petroleum needs of his fielded forces. Chapter IV discusses how the use of the NATO fuel BOA and U.S. contracts enabled NATO and the United States to meet the ISAF Commander's multinational fuel requirements.

IV. CONTRACT FUEL

The history of multinational fuel operations, understanding of national fuel organizations, and development of NATO as a role specialist nation for petroleum provide a foundation in order to move into a more technical discussion of contract fuel operations. The previous historical discussions revealed that the petroleum industry and suppliers have played a critical role in supplying fuel to theaters of military operations. Since WWII this role has expanded beyond production and strategic delivery. In NATO ISAF fuel operations, contractors overtook the fuel supply chain by delivering fuel into the operational theater and to the forward most outposts and forward operating bases (FOBs) in Afghanistan. Within the NATO chain of command, contractors pushed this level of battlefield support even further by managing regional strategic reserves, developing convoy support centers, providing private security services, and running airport service operations and the supporting airfield bulk fuel installations. In comparison, U.S. fuel operations provided the same levels of support to U.S. forces and coalition partners, albeit on a grander scale and through different contracting methods. This chapter compares the instruments that enabled the United States and NATO to meet the fuel requirement of the ISAF Commander. It begins with a detailed discussion of the NATO fuel BOA, followed by a discussion of U.S. DLA Energy fuel contracting. It compares how NATO and the United States established fuel prices, the nature of their contracting instruments, and how their logistics organizations managed operations and oversight. The chapter concludes with an introduction to the U.S. Army's Logistics Civil Augmentation Program (LOGCAP) as another contracting model that is used in U.S. contingency operations.

A. NATO BASIC ORDERING AGREEMENTS

With the establishment of the fuel BOAs, NATO clearly entered into a new era of its development. The BOAs demonstrated NATO's ability to operate independently from the constraints of its member nations while also providing the support necessary for its member and partner nations to execute a NATO-tasked mission. When no nation came

forward to act as a role specialist nation for fuel at the new NATO ISAF aerial ports of debarkation (APODs), Alliance policy allowed logisticians to develop fuel operations through third-party logistic support services.¹¹⁴ The authority to execute the BOAs fell well within established NATO procurement policy.¹¹⁵ Within NATO logistics policy, the designated Joint Force Command (JFC) had responsibility for developing the operational logistics plans and identifying the support required for those plans. NATO designated JFC HQ Brunssum as the operational command for ISAF. JFC HQ Brunssum utilized the authorities held within their Purchasing and Contracting (P&C) staff and within NATO logistics doctrine to implement the NATO fuel BOAs.¹¹⁶ Within this framework, NATO executed and oversaw the use of the BOA. This section will describe the BOA instrument in greater detail by discussing its features, pricing procedures, command structure and oversight.

1. NATO FUEL BOA: Structure, Characteristics and Procedures

The BOAs are not contracts but, as their name implies, they are agreements. NATO P&C staffs utilized BOAs to prevent unnecessary reoccurring negotiations with a single contractor who could have a larger number of separate contracts. BOAs generally defined the estimated quantities of required services or products, set a time period for execution, and left open the possibility of extending the BOA for future periods. P&C policy emphasized that BOAs should utilize commercial procedures to the maximum extent possible, especially for invoicing and billing. In addition, BOAs did not bind P&C staffs to purchase products or services only from the designated contractor in the

114. North Atlantic Treaty Organization, *Allied Joint Publication 4–Allied Joint Logistics Doctrine*, December 2003, accessed July 2, 2012, [https://nsa.nato.int/protected/unclass/ap/AJP-4\(A\).pdf](https://nsa.nato.int/protected/unclass/ap/AJP-4(A).pdf), 1-12–1-16.

115. North Atlantic Treaty Organization, *Bi-Strategic Command (Bi-SC) Directive 60-70*, December 22, 2004, 3-11– 3-12.

116. Major Royal Dutch Marechaussee Wouter van Koeveringe (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) interview by Michael Evans, May 30, 2012, interview vanKoeveringe.mp3, Evans Private Oral History Collection.; Major Royal Dutch Marechaussee Wouter van Koeveringe (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) e-mail message to authors on July 3, 2012; Wim de Hollander (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) e-mail message to authors, June 11, 2012.

agreement. The establishment of a BOA allowed P&C officers to quickly award future individual transactions without developing or renegotiating a contract for similar products or services.¹¹⁷

The NATO fuel BOAs represent three separate agreements for fuel services in and around Kandahar, Kabul, and Herat, Afghanistan. The JFC HQ Brunssum Financial Resources Branch P&C staff structured each of the BOAs similarly. With the exception of the Herat fuel BOA, which had only one statement of work, the P&C staff wrote the BOAs in three parts. The first two documents represented statements of work that defined the specific tasks as identified by the requirement holder, JFC HQ Brunssum Logistics Resources Branch, Logistics Operations and Plans Fuels Section, or simply JFC HQ Brunssum fuel. The P&C staff used these documents to solicit bids from commercial companies and selected one contractor for each of the three BOAs. The third document was the formal agreement signed between the selected contractor and JFC HQ Brunssum P&C. The statements of work and formal agreement were used together to detail the scope of work, specific requirements for each party in the agreement, and to identify optional requirements that can be exercised as required. The signed agreement described in detail everything from simple definitions of terms to specific liabilities and indemnity, and is by far the most technical document of the three. Here the P&C staff developed the legal aspects of the BOAs to form a set of binding agreements.

JFC Brunssum P&C developed the NATO fuel BOAs as an agreement directly between buyers and a contractor. As an example, the Kabul BOA defined the buyers as ISAF/NATO designated customers and identified the contractor as the supplier of the fuel related products and services.¹¹⁸ The BOA further specified that the buyer would pay a set price per liter (PPL) for fuel that would satisfy all of the contractor's costs for

117. North Atlantic Treaty Organization, *Bi-Strategic Command (Bi-SC) Directive 60-70*, December 22, 2004, 3-11-3-12.

118. Joint Force Command Headquarters Brunssum, "Basic Ordering Agreement (BOA) for the Provision of Aviation and Ground Fuels and Associated Products to NATO ISAF in the Kabul Area of Operation (AO) Between Allied Joint Force Command Headquarters (JFC-B) P&C and Nordic Camp Supply A/S," Agreement Number: IFIB/JBJ8P&C/002-07, July 20, 2007, 2.

expenses incurred during the supply of fuel and related fuel services.¹¹⁹ The contractors invoiced customers directly, and only involved JFC HQ Brunssum in cases of billing disputes. This system created a direct financial relationship between the ISAF troop contributing nations and other designated customers and the BOA contractors. JFC Brunssum and the NATO commands incurred no upfront costs and held no financial obligation to the contractor. As such, the BOAs remained separate from the NATO common budget and the designated customers assumed all financial responsibilities. By not utilizing NATO common funds, JFC HQ Brunssum P&C kept the NATO fuel BOA decision making within the hands of the NATO ISAF fuel team and separate from the diplomatic and military politics normally associated with the NATO common budget decision making cycle.

2. Price Per Liter

The total cost of fuel, from strategic acquisition through the final delivery and sale to the customer, was itemized within the NATO fuel BOA PPL. The initial signed agreements established a PPL by fuel type for each contractor. Whereas the initial written BOAs provided a limited itemization of the PPLs, later financial coordination between contractors and the JFC HQ Brunssum P&C staff led to a more detailed itemization of the PPL. This created a transparency not seen in other contracts or agreements and allowed for an open and fair negotiation of PPL adjustments. With this transparency, the PPLs were reviewed and adjusted on a monthly and a semiannual basis, and through incidental adjustments in formal agreement modifications. As of July 5, 2012, nineteen modifications have been made to the NATO fuel BOAs to include supplemental agreements in order to exercise option-year extensions of the original agreements.¹²⁰

119. Joint Force Command Headquarters Brunssum, "Basic Ordering Agreement (BOA) for the Provision of Aviation and Ground Fuels and Associated Products to NATO ISAF in the Kabul Area of Operation (AO) Between Allied Joint Force Command Headquarters (JFC-B) P&C and Nordic Camp Supply A/S," Agreement Number: IFIB/JBJ8P&C/002-07, July 20, 2007, 7.

120. Major Royal Dutch Marechaussee Wouter van Koevinge, "Clarification of the Price Per Liter" (presentation to the Senior NATO Logisticians' for ISAF, Brunssum, The Netherlands, May 15, 2012).

Table 4 shows an example of the itemized PPL and the timeline of price adjustments.¹²¹ The monthly PPL adjustments allowed the contractors and the JFC HQ Brunssum P&C staff to match agreement costs with international market fluctuations associated with the petroleum industry (based on the average monthly prices from the Platts' Mediterranean Cargos report), landed cost of strategic fuel, and contractor profit margin. The landed cost consists of the transportation-associated expenses incurred by the contractor for inter-theater transportation operations and the price of the actual fuel.

Month	ITEM	PPL in \$	% of PPL
XX	Landed cost of product (including inter Theatre Transport)	1.1253	58.73%
	Margin	0.1887	9.85%
	Cost of capital	0.0528	2.76%
	Price adjustment-(excess/short m-1)	-0.0094	-0.49%
	Demurrage	0.0110	0.57%
	Outbound Transportation Cost (Intra Theatre transport)	0.2321	12.11%
	COM RES K/Pipeline Cost	0.0900	4.70%
	Herat RLS and infrastructure opex	0.0020	0.10%
	Insurance Cost	0.0100	0.52%
	Mobile & Static security, Force Protection and Marshalling Cost	0.1073	5.60%
	ITV and Automation Cost	0.0000	0.00%
	Admin/Management overhead Cost	0.0850	4.44%
	Infrastructure operating expense	0.0564	2.94%
	RLS - meals, accom, waste mgt	0.0070	0.37%
	Medical	0.0020	0.10%
	Loss Recovery Cost	0.0191	1.00%
	Price adjustment recovery	-0.0631	-3.29%
	Total	1.9162	100%

Table 4. Example Itemized Price Per Liter for the NATO Fuel BOA with Adjustment Periods.¹²²

121. Major Royal Dutch Marechaussee Wouter van Koevinge (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) "Clarification of the Price Per Liter" (presentation to the Senior NATO Logisticians' for ISAF, Brunssum, The Netherlands, May 15, 2012).

122. From: Major Royal Dutch Marechaussee Wouter van Koevinge (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) "Clarification of the Price Per Liter" (presentation to the Senior NATO Logisticians' for ISAF, Brunssum, The Netherlands, May 15, 2012).

Semi-annual price adjustments were tied to the contractors' operational costs, the management of NATO ISAF fuel facilities, insurance, and intra-theater landed costs. Incidental adjustments to the PPL were based on the recovery costs allowed to the contractor in accordance with JFC HQ Brunssum P&C approved contractor wartime losses, as well as for directed contractor development and/or expansion of NATO ISAF fuel infrastructure. The JFC HQ Brunssum P&C staff published all PPL adjustments and disseminated it directly to the BOA designated customers.

In contrast to the NATO fuel BOA PPL, DLA Energy sells fuel to DoD customers at a standardized price per gallon. The DLA Energy price does not reflect the fully burdened cost of fuel (FBCF), which theoretically accounts for the total expenses within an entire fuel supply chain, as does the BOA's PPL. Because U.S. officials have not determined a single method to calculate the FBCF, there is currently neither an agreed upon dollar value for the U.S. estimate, nor an itemized cost of U.S. fuel which can be compared directly against the NATO fuel BOA PPL.¹²³ This concept is explained in greater detail in a discussion of financial risks to fuel operations in Chapter V, beginning on page 104.

The PPL included internal distribution to the NATO APODs and the national FOBs, as well as full spectrum fuel operations to the NATO APODs in KAF, KAIA, and

123. Refer to section 3.1.6 of the Defense Acquisition Guidebook for a discussion of the fully burdened cost of energy, accessed August 3, 2012, <https://acc.dau.mil/CommunityBrowser.aspx?id=314767#3.1.6>; For the most recent cost estimations provided to the U.S. Congress for Afghanistan fuel see Moshe Schwartz, Katherine Blakely, and Ronald O'Rourke, "Department of Defense Energy Initiatives: Background and Issues for Congress," Report to Congress No R42558 (Washington, DC: Congressional Research Service, June 5, 2012): 6–7, accessed July 28, 2012, <http://www.fas.org/sgp/crs/natsec/R42558.pdf>; The Commission on Wartime Contracting in Iraq and Afghanistan developed the most comprehensive breakdown of personnel costs related to U.S. fuel operations see their final report to the U.S. Congress, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, August 2011, Appendix F.; Steve Siegel, Steve Bell, Scott Dicke, and Peter Arbuckle, "Sustain the Mission Project: Energy and Water Costing Methodology and Decision Support Tool," Army Environmental Policy Institute Final Technical Report, National Defense Center for Energy and Environment, July 2008.; For a non-government estimation of Afghanistan/Iraq fuel costs see Admiral (ret.) U.S. Navy John B. Nathman, "Powering America's Defense: Energy and the Risks to National Security" (presentation at the Environmental and Energy Studies Institute Energy, National Security and Defense Department Solutions Conference, September 10, 2009) accessed July 28, 2012, <http://www.eesi.org/energy-national-security-and-defense-department-solutions-10-sep-2009>., or Charles F. Wald, and Tom Captain, "Energy Security American's Best Defense: A Study of Increasing Dependence on Fossil Fuels in Wartime, and Its Contribution to Ever Higher Casualty Rates," Deloitte Development LCC, 2009.

Herat. The unique financial aspect provided by the NATO fuel BOAs PPL includes not only fuel, but also fuel related services. In addition to the NATO APODs, the PPL provided for contractor management of the British-owned fuel installation at FOB Bastion, as well as strategic fuel acquisition and delivery to other contractor owned and operated storage facilities. The PPL also provides for contractor oversight of fuel quantity and quality throughout the BOA managed areas of the ISAF theater of operations. Lastly, the sale of fuel provided for all fuel related infrastructure development and expansion projects directed by JFC HQ Brunssum for the BOA customers and the ISAF Commander.¹²⁴

If customers chose not to utilize the complete services covered by the BOA's PPL, they would be responsible for acquiring such services at their own cost. Such services may include strategic fuel reserve facilities and associated manpower requirements for those facilities, additional transportation internal to the customers' operations, and any other quality control measures such as laboratory testing required by the customers. By doing so, these customers actually paid twice for some fuel services. The most costly double payment came from internal transportation costs that were already calculated into the NATO PPL. Customers' invoices were not reduced if they provided their own internal distribution of fuel or any other duplicated services. In all but four of the ISAF installations, the cost of FOB bulk fuel installations remained separate from the NATO PPL and so the customers assumed construction, operation, and personnel costs in addition to the PPL. Although some nations elected to incur their own costs for fuel services above what was already paid through the PPL, many others chose to save on costs by using the BOA to bring a wider variety of tactical fuel support services to FOBs that were already included in the PPL.¹²⁵

124. Chief Master Sergeant U.S. Air Force (ret.) Donald Gullledge (DLA Energy Representative to JFC HQ Brunssum), interview by Michael Evans, April 15, 2012, interview Santiago.mp3, Evans Private Oral History Collection. NOTE: Mr. Gullledge was interviewed jointly with LTC Santiago.; Chief Master Sergeant U.S. Air Force (ret.) Donald Gullledge (DLA Energy Representative to JFC HQ Brunssum) e-mail message to authors, October 27, 2011.

125. Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) "Fuel Concept on ISAF," (Presentation to the Senior NATO Logisticians' for ISAF, Brunssum, The Netherlands, May 15, 2012); Chief Master Sergeant U.S. Air Force (ret.) Donald Gullledge (DLA Energy Representative to JFC HQ Brunssum) e-mail message to authors, July 28, 2012.

Prior to the establishment of the fuel BOAs, NATO and the various ISAF TCNs built the basic fuel infrastructure of the early ISAF fuel supply chain. With establishment of the BOAs, the management of NATO and TCN facilities at the NATO APODs were transferred to the BOA contractors. Whether nations or NATO purchased it, the title of all properties were transferred to NATO through the BOA.¹²⁶ Using the BOA PPL system, the JFC HQ Brunssum fuel staff further expanded the ISAF infrastructure to meet the fuel requirements of the ISAF Commander and the customers. For example, when the Herat APOD required additional fuel storage in March of 2011 to meet increasing usage demands, the BOA contractors submitted a proposal for its expansion. Following a JFC HQ Brunssum Crisis Requirements Coordination Board project review, the JFC HQ Brunssum P&C staff approved the project and agreed upon on a price of \$1,050,841.00. The two parties signed an agreement modification that documented the contractor's proposal and project timeline, and established an incidental PPL increase of \$0.006568 for two months. The BOA contractor used the PPL increase to pay for all the necessary costs to expand the Herat installation. In addition, by paying the increased PPL NATO assumed ownership of the additional fuel bladders when it accepted the completed project.¹²⁷ The only exception to NATO ownership of BOA generated facilities or equipment was in the commercial reserves. The NATO fuel BOAs required contractors to provide a strategic fuel reserve for the ISAF Commander; the title of the reserve fuel and reserve storage facilities remained with the BOA contractors.¹²⁸

Although contractors assumed near total control of the supply chain, NATO maintained control of fuel and fuel support products. The JFC HQ Brunssum P&C staff structured the BOAs so that title of fuel remained with the contractors throughout almost

126. Lieutenant Colonel U.S. Army (ret.) Brian McMurry (JFC HQ Brunssum second Fuel Chief executing the BOA), interview by Michael Evans, April 18, 2012, interview McMurry.mp3, Evans Private Oral History Collection.

127. Joint Force Command Headquarters Brunssum, "Agreement for the Provision of Aviation and Ground Fuels and Associated Products to NATO ISAF and Additional Requiring Activities in the Herat Area of Operation Between Operation Between Allied Joint Force Command Headquarters (JFC-B) P&C and Supreme Site Services GmbH," Agreement number: 5080/JBJ8P&C/002/06/ISAF, February 1, 2006, Modification #8 December 1, 2011.

128. Wouter van Koeveringe (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) e-mail message to authors, July 3, 2012.; Wouter van Koeveringe (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) e-mail message to authors, July 9, 2012.

the entire supply chain. The KAF agreement stated that the contractor retained title for the fuel during acquisition, transport, delivery and distribution of fuel. Title did not transfer until the fuel was accepted by the buyer and transferred into national storage sites or issued to an authorized customer at the four NATO contractor-managed facilities.¹²⁹ Ownership of title ensured that the contractors held all risks related to fuel operations except for the recovery cost of specified lost fuel. The NATO fuel BOAs allowed the contractor to recoup their financial losses due to terrorist activities only. This included loss of product but not equipment or personnel. In replacing the lost fuel, the reimbursement allowed for additional security costs, adjustments for new customs duties and/or taxes, and costs due to alternate routes caused by subsequent weather or security developments. When authorized by JFC HQ Brunssum P&C, contractors were allowed to increase the PPL for a set period until such time as the approved costs were recovered.¹³⁰

3. NATO/ISAF Command Structure

The BOAs fit easily into the NATO ISAF fuel command structure without adding additional national or NATO decision-making layers. Figures 12 and 13 provide a visual representation of the NATO fuel command structure and information flow. The HQ IJC fuel staff acted as liaison between the buyers, contractors, and JFC HQ Brunssum. The HQ IJC represented the buyers, and was responsible for determining the required fuel needed from the contractors. They consolidated monthly ISAF fuel requirements sixty days prior to the required delivery month. JFC HQ Brunssum fuel validated the ISAF requirement, and JFC HQ Brunssum P&C placed the order with the contractors. This established a ninety-day order cycle with one month of fuel order execution and two

129. Joint Force Command Headquarters Brunssum, "Agreement for the Provision of Aviation and Ground Fuels and Associated Products to NATO ISAF in the Kandahar Area of Operation Between Allied Joint Force Command Headquarters (JFC-B) P&C and Supreme Fuels GmbH & Co KG," Agreement Number: IFIB/JBJ8P&C/06-72, March 15, 2007, 5.

130. Joint Force Command Headquarters Brunssum, "Agreement for the Provision of Aviation and Ground Fuels and Associated Products to NATO ISAF in the Kandahar Area of Operation Between Allied Joint Force Command Headquarters (JFC-B) P&C and Supreme Fuels GmbH & Co KG," Agreement Number: IFIB/JBJ8P&C/06-72, March 15, 2007, 9.

months of projected fuel orders. The BOAs stipulated the allowed variances and changes to orders by JFC HQ Brunssum P&C and the contractors, including the associated penalties for exceeding variances.¹³¹

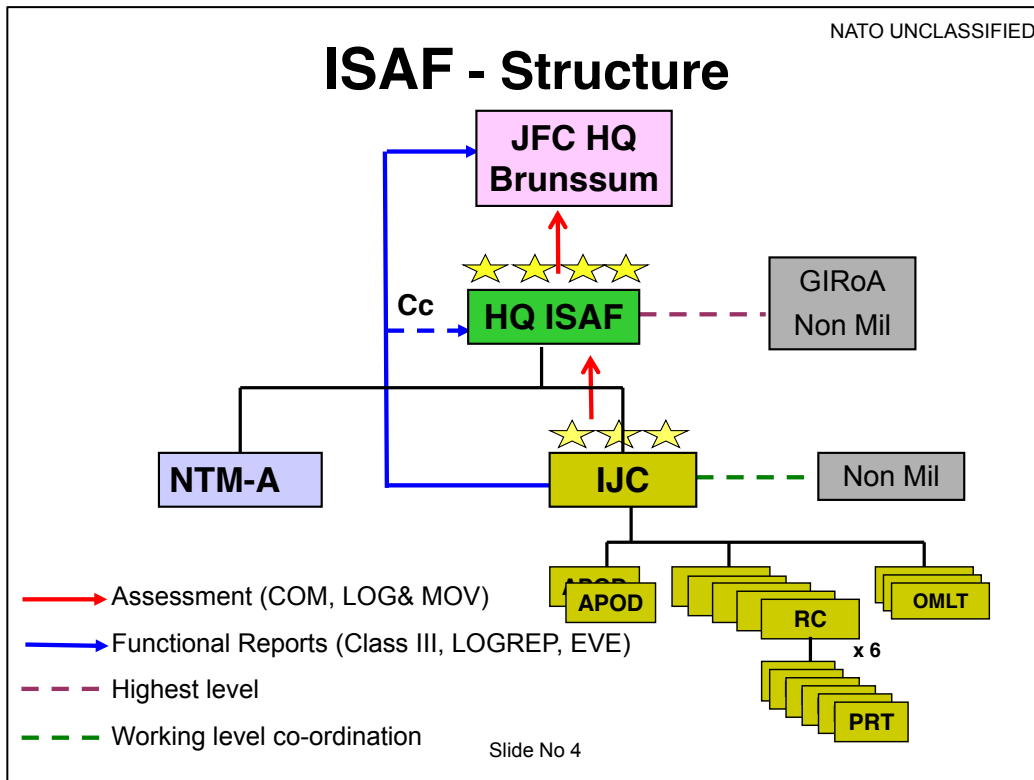


Figure 12. NATO ISAF Fuel Team Command Structure Information Flow.¹³²

131. Joint Force Command Headquarters Brunssum, "Basic Ordering Agreement (BOA) for the Provision of Aviation and Ground Fuels and Associated Products to NATO ISAF in the Kabul Area of Operation (AO) Between Allied Joint Force Command Headquarters (JFC-B) P&C and Nordic Camp Supply A/S," Agreement Number: IFIB/BJ8P&C/002-07, July 20, 2007, 4.; Joint Force Command Headquarters Brunssum, "Statement of Work (SOW) for the Provision of Aviation & Ground Fuels for NATO ISAF Kabul International Airfield (KAIA), Afghanistan," July 25, 2007, 7, 12.; Joint Force Command Headquarters Brunssum, "Basic Ordering Agreement (BOA) for the Provision of Aviation and Ground Fuels and Associated Products to NATO ISAF in the Kabul Area of Operation (AO) Between Allied Joint Force Command Headquarters (JFC-B) P&C and Nordic Camp Supply A/S," Agreement Number: IFIB/BJ8P&C/002-07, July 20, 2007, Modification #9, October 1, 2011, 2.

132. From: Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) "Fuel Concept on ISAF," (Presentation to the Senior NATO Logisticians' for ISAF, Brunssum, The Netherlands, May 15, 2012).

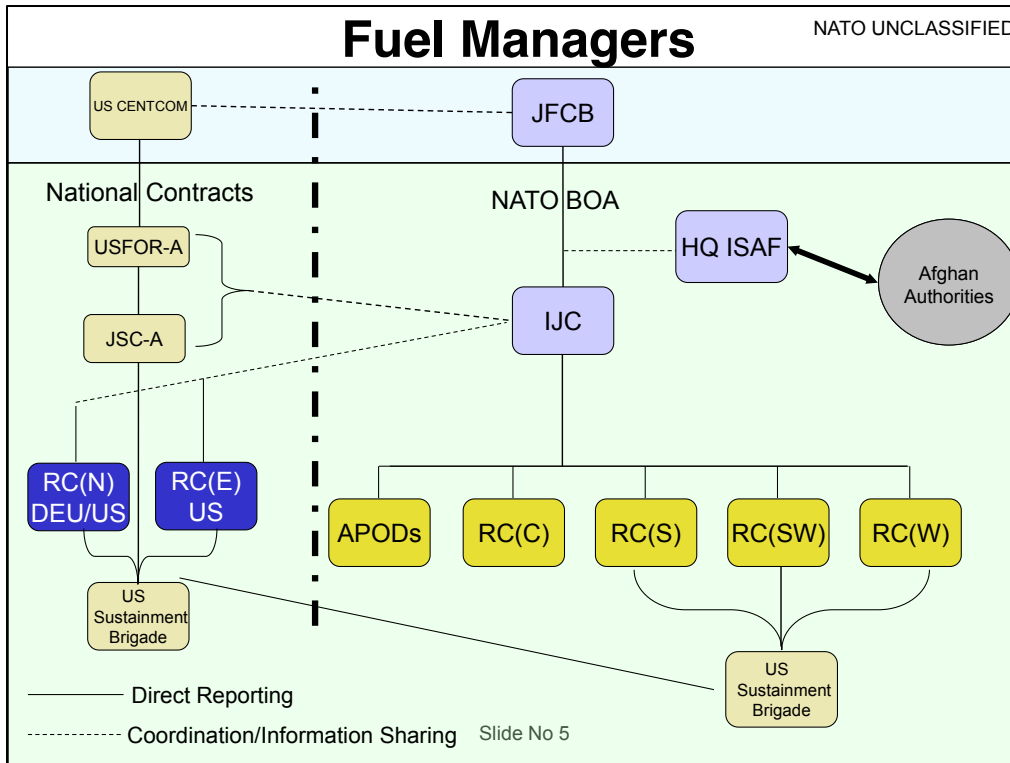


Figure 13. NATO ISAF Fuel Command Structure.¹³³

4. NATO/ISAF Contract Oversight

Initial oversight of the NATO fuel BOAs remained within in the hands of a small group of individuals. As the NATO ISAF fuel operation grew, a formal process of agreement oversight developed, broadening management of the BOA. For new construction or expansion of fuel faculties, JFC HQ Brunssum fuel staff utilized standing APOD and NATO engineering committees to review and ensure contractor projects were properly integrated into existing NATO facilities. In addition, formal Crisis Recourse Coordination Boards were convened for final review and acceptance of any NATO fuel BOA projects.¹³⁴ To better manage theater level oversight, JFC HQ Brunssum P&C

133. From: Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) “Fuel Concept on ISAF,” (Presentation to the Senior NATO Logisticians’ for ISAF, Brunssum, The Netherlands, May 15, 2012).

134. Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA), interview by Michael Evans, April 15, 2012, Interview Santiago.mp3, Evans Private Oral History Collection.; Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) “Fuel Concept on ISAF,” (Presentation to the Senior NATO Logisticians’ for ISAF, Brunssum, The Netherlands, May 15, 2012).

integrated a series of key performance indicators into the BOAs that provided a more detailed description of both the contractor's and JFC HQ Brunssum's responsibilities. The key performance indicators specifically addressed management of the bulk fuel installations, stock levels at the commercial reserves, and the monthly fuel orders. JFC HQ Brunssum P&C monitored the contractors' general performance and the key performance indicators through appointed contracting officer technical representatives (COTRs) within the regional commands and at the NATO APODs. These individuals acted on behalf of the JFC HQ Brunssum P&C officer, and validated that contractors executed the requirements of the agreements.¹³⁵

B. DLA ENERGY CONTRACTS

Whereas the NATO fuel BOA was managed by a small group of individuals that served a relatively small customer base, the U.S. DLA Energy was a significantly larger organization that was responsible for managing and supplying fuel to the world's largest consumer, the DoD. DLA Energy has served the DoD under various names since WWII, and it continues to serve from worldwide regional headquarters and bulk fuel supply points. Together, DLA Energy and NATO have partnered to supply millions of gallons of fuel to the coalition during OEF. Although DLA Energy is the larger and more experienced organization, it has learned some practical solutions from NATO during OEF. This section describes DLA Energy's traditional contracting process, its contract types and costs, the evolution of its contracts in OEF, and its command structure and oversight process.

1. DLA Energy Contracting Process and Types

After receiving validated customer requirements, DLA Energy solicits proposals from suppliers and evaluates bids, seeking the lowest total cost to the U.S. government.

135. Joint Force Command Headquarters Brunssum, "Basic Ordering Agreement (BOA) for the Provision of Aviation and Ground Fuels and Associated Products to NATO ISAF in the Kabul Area of Operation (AO) Between Allied Joint Force Command Headquarters (JFC-B) P&C and Nordic Camp Supply A/S," Agreement Number: IFIB/BJ8P&C/002-07, July 20, 2007, Modification #9, October 1, 2011.; Major Royal Dutch Marechaussee Wouter van Koeveringe, Wouter (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) "Presentation of the NATO BOA / Contracting Officer Technical Representative (COTR)," Training document developed for new ISAF fuel BOA COTRs, December 23, 2011.

The most competitive bids are awarded with indefinite delivery/indefinite quantity (ID/IQ) contracts in which contractors are bound to provide an indefinite quantity of fuel during a fixed period.¹³⁶ According to the Federal Acquisition Regulations (FAR), the government and the contractor agree to at least a minimum quantity of supplies (in this case, fuel) in an ID/IQ contract. This type of instrument is recommended when a recurring need is anticipated and “when the Government cannot predetermine, above a specified minimum, the precise quantities of supplies or services that the Government will require during the contract period...”¹³⁷ In addition, the FAR mandates that multiple awards of indefinite-quantity contracts be given “under a single solicitation for the same or similar supplies or services to two or more sources” to the maximum extent possible.¹³⁸ These “multiple award contracts” promote competition and provide the best value to the U.S. government. Having several sources provides redundancy to the government and hedges against loss of product or services should a single contractor experience hardship. In the case of DLA Energy, issuing multiple awards ensures that an uninterrupted supply of fuel will be available from several sources.

DLA Energy uses firm fixed price contracts with an economic price adjustment (commonly referred to as FFP-EPA) that “provides for upward and downward revision of the stated contract price upon the occurrence of specified contingencies.”¹³⁹ DLA Energy contracts specify that fuel prices will be reviewed against the Platt’s Oilgram price report and adjusted bi-monthly to ensure the government is paying the contractor at current market prices.¹⁴⁰ DLA Energy is also afforded price breaks due to the enormous quantities of its orders. In 2011, DLA Energy acquired nearly 115 million barrels of fuel worth \$15B, which it sold to DoD customers at a product-specific “standard price.” The

136. Henry Canaday, “Energy Expertise,” *Military Logistics Forum* 6 no 5 (June 2012).

137. Federal Acquisition Regulations, Part 16.504 “Indefinite Quantity Contracts.” Vol. 1, March 2005.

138. Federal Acquisition Regulations, Part 16.504 “Indefinite Quantity Contracts.” Vol. 1, March 2005.

139. Anthony Andrews, “Department of Defense Fuel Spending, Supply, Acquisition, and Policy,” Congressional Research Service, September 22, 2009, 15–16.

140. Federal Business Opportunities Database, “Amendment 3 to DLA Energy solicitation SP0600-11-R-0235,” accessed July 20, 2012, https://www.fbo.gov/index?s=opportunity&mode=form&id=580d12760525dea73afd15c31fa18d43&tab=core&_cvview=1.

standard price of fuel is based on the estimated cost of purchased fuel 18 months in the future, the budgeted cost of transportation, storage, management, and any negative/positive variances in the Defense Working Capital Fund for fuel. The Defense Working Capital Fund is a revolving fund that allows DLA Energy to absorb market fluctuations in fuel prices. DLA Energy increases the standard price to make up for short periods or it reduces prices when costs are less than anticipated.¹⁴¹ During the month of June 2011, DLA Energy sold jet fuel (U.S. jet fuel designation JP-8) at \$3.95 per gallon.¹⁴² In comparison, the NATO fuel BOA offered the equivalent “standard price” jet fuel (NATO jet fuel designation F-34) at \$4.25 per gallon from Supreme Group and at \$3.55 per gallon from Nordic Camp Supply (NCS).¹⁴³

In addition to awarding fuel contracts, DLA Energy also awards contracts for construction, maintenance and operation of bulk fuel facilities. While DLA Energy tenders separate contracts for these services, the NATO ISAF fuel team amends an existing agreement and increase the PPL in order to include fuel storage construction, maintenance and operation. Because NATO does not have a role specialist nation for its bulk fuel storage, the contractors complete construction, maintenance, and operational work. These modifications to the NATO fuel BOAs split the title of bulk fuel facilities between the contractors and NATO. The three NATO APOD sites are NATO owned and contractor operated while the ISAF commercial reserve sites, as well as the title for fuel, are contractor owned and operated. For DLA Energy contracts the majority of Defense Fuel Support Points are still U.S. government owned and operated with title of fuel

141. Defense Logistics Agency Energy, “What the Standard Price of Fuel Is,” accessed July 31, 2012, http://p2web.desc.dla.mil/pls/p2wp/std_price_pkg.std_price_list.

142. Defense Logistics Agency Energy, “FY2011 Standard Prices June 1, 2011,” accessed July 20 2012, [http://www.energy.dla.mil/DLA_finance_energy/Documents/Standard%20Prices/FY%202011%20Standard%20Prices%20\(Effective%20June%201,%202011\).pdf](http://www.energy.dla.mil/DLA_finance_energy/Documents/Standard%20Prices/FY%202011%20Standard%20Prices%20(Effective%20June%201,%202011).pdf).

143. Chief Master Sergeant U.S. Air Force (ret.) Donald Gullede, (DLA Energy Representation to JFC HQ Brunssum) “Charts Overall Pricing Supreme and NCS 18-07-2012.xlsx,” (prepared by Major Royal Dutch Wouter Marechaussee van Koeveringe, JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) e-mail message to the authors, July 30, 2012.

transferring to the U.S. government.¹⁴⁴ The only exception in Afghanistan is the Red Star facility near Bagram AB where the U.S. Defense Fuel Support Point and the title of fuel is contractor owned and operated.¹⁴⁵

2. Evolution of DLA Energy OEF Contracts

DLA Energy's role in Afghanistan evolved from its traditional "strategic" mission of delivering bulk fuel. Normally DLA Energy's Bulk Fuels Division contracted for delivery of fuel to bulk storage facilities at various bases in Afghanistan, while the military services were responsible for supplying the forces and equipment to provide inland transportation and distribution of fuel from the bulk storage facilities to subordinate units in the field. In the late 2000s, due to manpower shortfalls and conflicting mission demands, USCENTCOM reached out to DLA Energy for assistance in soliciting and managing inland transportation and distribution contracts. In 2009, in a departure from its traditional mission of bulk fuel delivery, DLA Energy employed both its Bulk Fuels and Direct Delivery Fuels divisions to begin awarding inland distribution contracts in Afghanistan.¹⁴⁶ As of 2011, DLA Energy has awarded ID/IQ multiple award contracts to six different contractors to deliver fuel to subordinate units at remote FOBs.¹⁴⁷

DLA Energy's operations in Afghanistan were also characterized by the changes in the way it managed the fuel supply chain. Since 1991, DLA Energy "capitalized" its fuel inventory, meaning DLA Energy paid for fuel and infrastructure upfront and owned "all bulk petroleum product[s] from the point of purchase until its final point of issue to

144. Defense Logistics Agency Energy, "Factbook: Fiscal Year 2011," 45, accessed May 24, 2012, http://www.energy.dla.mil/energy_enterprise/Documents/Fact%20Book%20FY2011%20Rev.pdf.

145. Chief Master Sergeant U.S. Air Force (ret.) Donald Gullede, (DLA Energy Representation to JFC HQ Brunssum) e-mail message to authors, July 28, 2012.

146. Lynda Brown, "Bulk Services Reach Farther with Afghanistan Transportation Contracts," *Fuel Line* (January, 2009), 5.

147. Colonel U.S. Army Jeffrey B. Carra, (Commander, 165th Quartermaster Group (POL), Fort Belvoir, VA and Camp Arifjan, Kuwait (2006–2009); Chief, Iraq Sub-Area Petroleum Office 2008–2009; Chief, Afghanistan Sub-Area Petroleum Office 2008–2009; Chief, Joint Petroleum Office, U.S. Central Command (2009–2010)), telephone interview, July 18, 2012.

power aircraft, ships, and ground equipment.”¹⁴⁸ In 2007, DLA Energy began the practice of administering Free-On-Board Destination contracts in Afghanistan, under which it would only pay for fuel once a DoD end-user took possession of it at a bulk fuel storage site or a FOB. In this case, the “uncapitalized” fuel remained the property of the contractor who must manage the risks of in-transit losses within the treacherous LOCs of the Afghanistan combat zone. By shipping fuel Free-On-Board Destination, DLA Energy better manages the risk of product loss and finds greater efficiency in contract management.¹⁴⁹ DLA Energy’s use of Free-On-Board Destination contracts is similar to the NATO fuel BOA, in that no payment is made until the product is delivered, and that responsibility for the entire supply chain (less oversight of contracts) is relinquished to the contractor.

3. DLA Energy Command Structure and Oversight

DLA Energy shoulders a heavy burden to oversee the thousands of contracts it issues. Each of DLA Energy’s Commodity Business Units, such as the Bulk Fuels and Direct Delivery Fuels divisions, are responsible for oversight of its own contracts. In order to perform this function, DLA Energy’s Commodity Business Units rely on contracting officers and contracting officer representatives (CORs) that are embedded with or near its customers. CORs may be employees of DLA Energy or military service members who are responsible for ensuring that the terms of a contract are fulfilled by contractors. Although the Commodity Business Units are responsible for overseeing its own contracts, the DLA Energy Acquisition Policy and Oversight office, which is under the purview of the Deputy Commander, DLA Energy, also advises each Commodity Business Unit on procurement-related matters, and provides oversight for all procurement functions.¹⁵⁰ DLA Energy also receives contract administration and oversight from the Defense Contract Management Agency (DCMA). DCMA “works directly with defense

148. Global Security.org, “DLA Energy,” December 18, 2011, accessed July 20 2012, <http://www.globalsecurity.org/military/agency/dod/desc.htm>.

149. Lynda Brown, “Bulk Services Reach Farther with Afghanistan Transportation Contracts,” *Fuel Line* (January, 2009), 5.

150. Defense Logistics Agency Energy, “Factbook: Fiscal Year 2011,” 45, accessed July 31, 2012, http://www.energy.dla.mil/energy_enterprise/Documents/Fact%20Book%20FY2011%20Rev.pdf.

suppliers to ensure that DoD, federal and allied government supplies and services are delivered on time, at projected cost and meet all performance requirements.¹⁵¹ DCMA assists DLA Energy in constructing solicitations, selecting capable contractors, writing contracts and monitoring contractor performance. In addition, the Defense Contract Audit Agency (DCAA) also assists DLA Energy by providing accounting, financial advisory, negotiation, administration, and settlement services.¹⁵² Figure 14 depicts the command relationships and oversight responsibilities of the organization surrounding DLA Energy.

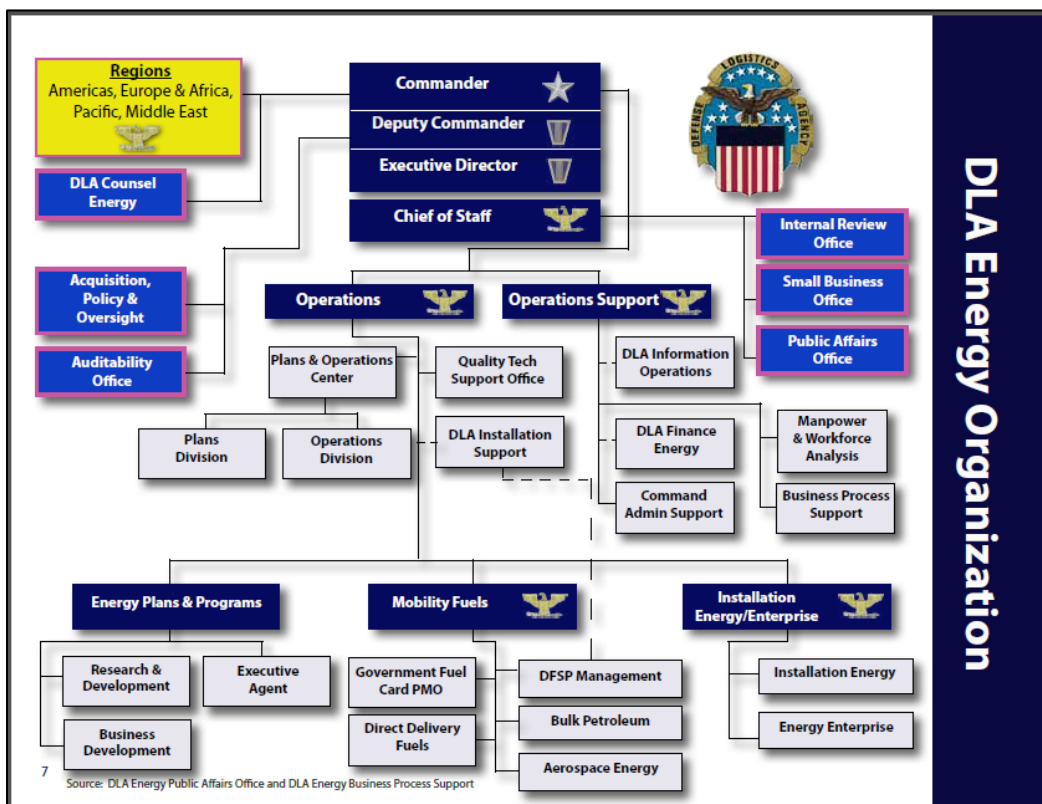


Figure 14. DLA Energy Command Structure.¹⁵³

151. Defense Contract Management Agency, “Fact Sheet: FAQs.” July 2012, 5, accessed July 31, 2012, http://www.dcma.mil/communicator/files/DCMA_Fact_Sheet.pdf.

152. Defense Contract Audit Agency, “DCAA History,” July 2012, accessed August 2, 2012, <http://www.dcaa.mil/>.

153. From: Defense Logistics Agency Energy, “Factbook: Fiscal Year 2011,” 7, accessed July 31, 2012, http://www.energy.dla.mil/energy_enterprise/Documents/Fact%20Book%20FY2011%20Rev.pdf.

Along with internal government agency oversight and audits, DLA Energy employs third party contractors to oversee its contracts in locations where U.S. personnel or agencies cannot travel. For example, DLA Energy has contracted with Cogeco Private Limited based in Lahore, Pakistan, to provide quality control checks on fuel originating in and transiting through Pakistan.¹⁵⁴ This is part of DLA Energy's contractor Quality Control Plan to provide oversight of their bulk fuel contracts. It is a firm-fixed-price contract with a set period of performance. The contractor's duties are to inspect and observe that DLA Energy's bulk fuel contractors are meeting the obligations of their performance work statements. Cogeco provides key oversight of the supply chain by physically witnessing and reporting on the contractors work operations from the refinery/port facilities through the border crossing points into Afghanistan. Essentially, Cogeco performs the duties of a COR/COTR. They also provide quality checks on fuel quality through laboratory testing.¹⁵⁵ Cogeco Private Limited was recently awarded a six-month extension ending on November 30, 2012 with an estimated value of \$315,102.00.¹⁵⁶

C. OTHER U.S./NATO CONTRACTS

1. The Logistic Civil Augmentation Program

The Logistics Civil Augmentation Program (LOGCAP) provides contractor support to the U.S. Army, and is one of several options available to commanders for meeting combat support and combat service support shortfalls during crises. LOGCAP is a prominent logistics support instrument in USCENTCOM, and one against which it is

154. Federal Business Opportunities Database, "Justification for Other Than Full and Open Competition," Defense Logistics Agency Energy Contract Number SP0600-07-C-5707 Inspection and Laboratory Services, accessed July 30, 2012, https://www.fbo.gov/index?s=opportunity&mode=form&tab=core&id=246f979952ceb7277cdfa41e1b0c7333&_cview=1.

155. Federal Business Opportunities Database, "Base Notice: Inspection and Testing Service for Pakistan," Defense Logistics Agency Energy Contract Number SP0600-11-R-0532 posted September 13, 2011, accessed July 30, 2012, https://www.fbo.gov/?s=opportunity&mode=form&tab=core&id=5538935057917ad02bcda2b5921047ee&_cview=1.

156. Federal Business Opportunities Database, "Justification for Other Than Full and Open Competition," Defense Logistics Agency Energy Contract Number SP0600-07-C-5707 Inspection and Laboratory Services, accessed July 30, 2012, https://www.fbo.gov/index?s=opportunity&mode=form&tab=core&id=246f979952ceb7277cdfa41e1b0c7333&_cview=1.

appropriate to contrast the NATO fuel BOA. Both instruments are critical in the support of coalition forces, and both differ in the scope of its support mission, the types of agreements into which it enters with contractors, the cost of investment in the program, and the amount of manpower and oversight required to execute the program effectively. In order to provide contrast between these two programs, this section explains the purpose and background of LOGCAP, its contract types and features, and the organization and oversight that surrounds it.

2. LOGCAP Purpose and Background

LOGCAP was developed in 1985 to provide such non-combat services to the U.S. Army as “delivering food, water, fuel, and spare parts; operating dining and laundry facilities; providing housing and sanitation; moving personnel and supplies; engineering and constructing projects; and maintaining facilities.”¹⁵⁷ The U.S. Army considers the use of contractors as a “last resort” after exhausting the other military services, allied support, and local contracting.¹⁵⁸ However, USCENTCOM has employed LOGCAP extensively since 1992, and is now considered essential to the success of operations. Using civilian contractors to augment military forces during conflict enables planners to mitigate several issues, such as the political sensitivity that accompanies activating guard and reserve forces, the lack of host nation support agreements in undeveloped countries, the troop ceilings designated to reduce U.S. presence, and the need to preserve military units to respond to a major regional conflict.¹⁵⁹ Although the U.S. Army originated it, LOGCAP is available to and is used by the other services.¹⁶⁰

The first LOGCAP contract was competitively awarded to Brown and Root Services (now Kellogg, Brown and Root, or KBR) for one year with four option years in

157. “Wartime Contracting Commission to Query Federal Officials Over Multi-billion-Dollar Logistics Contracts,” (prepared by Clark Irwin) Arlington: Commission on Wartime Contracting in Iraq and Afghanistan, April 28, 2009, 1.

158. Government Accountability Office, “Contingency Operations: Opportunities to Improve the Logistics Civil Augmentation Program,” GAO/NSIAD-97-63. Washington, D.C.: February, 1997, 6.

159. Government Accountability Office, “Contingency Operations: Opportunities to Improve the Logistics Civil Augmentation Program,” GAO/NSIAD-97-63. Washington, D.C.: February, 1997, 4.

160. Government Accountability Office, “Contingency Operations: Opportunities to Improve the Logistics Civil Augmentation Program,” GAO/NSIAD-97-63. Washington, D.C.: February, 1997, 2.

1992.¹⁶¹ It provided logistics support to U.S. and United Nations (UN) forces in Somalia and the Balkans. LOGCAP II was awarded to DynCorp in 1997 to support U.S. forces in the Philippines, Latin America, and East Timor. LOGCAP III was again awarded to KBR in 2001, and LOGCAP IV was competitively awarded to DynCorp International LLC, Fluor Intercontinental Inc., and KBR Services in 2008. The Army also selected a 4th contractor under LOGCAP IV, Serco-North America, “to provide planning support, essentially monitoring the three other contractors. This structure introduces competition into the contracting process and allows the U.S. Army to manage the LOGCAP task orders more effectively.”¹⁶² The two most recent LOGCAPs supported operations in Iraq, Afghanistan, Kuwait, Djibouti, and Georgia.¹⁶³ Under all LOGCAPs, the contractor was required to develop a worldwide management plan, participate in planning and exercises, and prepare to execute the plans upon notification.

The U.S. Air Force and Navy also administer programs for contractor support, even though LOGCAP is available for use, and often is used by them. In fact, before creating their programs, both the U.S. Air Force and Navy relied on LOGCAP for support in Aviano, Italy, and during operations in Somalia. Both the U.S. Air Force and Navy admit that LOGCAP can meet their requirements; however they claim that contractor responsiveness and control was improved by maintaining their own programs. The Government Accountability Office believes that the services’ separate logistics support contracts provide similar services, and that LOGCAP could fulfill each service’s requirements as well as save the DoD money overall. A Government Accountability Office report explains that “[a]lthough the size and primary purpose of the three programs differ somewhat, the contracts will require similar engineering, logistics, and planning services. For example, under all three programs, the contractors will be required

161. Government Accountability Office, “Contingency Operations: Opportunities to Improve the Logistics Civil Augmentation Program,” GAO/NSIAD-97-63. Washington, D.C.: February, 1997, 2.

162. *Defense Industry Daily*, “LOGCAP IV: Billions of Dollars Awarded for Army Logistics Support.” August 3, 2011, accessed July 20, 2012, <http://www.defenseindustrydaily.com/Billions-of-Dollars-Awarded-Under-LOGCAP-4-to-Supply-U.S.-Troops-in-Afghanistan-05595/>.

163. “Wartime Contracting Commission to Query Federal Officials Over Multi-Billion-Dollar Logistics Contracts,” (prepared by Clark Irwin) Arlington: Commission on Wartime Contracting in Iraq and Afghanistan, April 28, 2009, 2.

to provide construction services and supplies and, in the U.S. Army and the Air Force programs, contractors are asked to identify potential civilian resources that can be relied on in contingencies.”¹⁶⁴

3. LOGCAP Contract Types and Features

The contracts under the first three LOGCAPS were ID/IQ and were awarded to a single vendor. The LOGCAPs provided critical support to U.S. military operations worldwide, but government audits uncovered incidents of fraud, waste and abuse by KBR under LOGCAP III. In order to remedy the perceived problems in contractor performance, accountability and oversight under LOGCAP III, U.S. Army contracting officials sought services from multiple contractors for LOGCAP IV. LOGCAP IV was awarded as an ID/IQ multiple award contracts under which the three contractors compete for individual task orders under the overall contract. The ID/IQ multiple award contracts increases competition between the three contractors and is meant to improve transparency, quality and cost effectiveness.

In his testimony to the Commission on Wartime Contracting in Iraq and Afghanistan, Jeffrey Parsons, the Executive Director of the U.S. Army Contracting Command, explained the benefits of multiple award contracts in LOGCAP IV:

The multiple award approach reduces risk by removing a single point of failure. It incentivizes contractor performance by providing built-in quick-response alternatives should any one contractor fail to provide good contract performance. At the same time, the multiple award approach keeps prices down through competition at the task order level. This strategy increases capacity by broadening the industrial base the Army can draw upon to support many complex operations occurring across the globe at any given time.¹⁶⁵

The LOGCAP IV contracting process begins when the U.S. Department of the Army issues requests for proposals to solicit bids on task orders. The three contractors then compete for award of the open task orders by submitting a bid for consideration. The

¹⁶⁴ Government Accountability Office, “Contingency Operations: Opportunities to Improve the Logistics Civil Augmentation Program,” GAO/NSIAD-97-63. Washington, D.C.: February, 1997, 23–24.

¹⁶⁵ Jeffrey Parsons, Hearing transcript: “LOGCAP Support-contracting Challenges in Iraq and Afghanistan,” Arlington: Commission on Wartime Contracting in Iraq and Afghanistan, May 4, 2009, 28.

Department of the Army then chooses the proposal that provides the best value to the government, and evaluates the contractor's bids according to the following factors, listed in descending order of importance: technical/management approach, past performance, and cost/price.¹⁶⁶ LOGCAP IV was awarded as a maximum 10-year contract (one base year and nine option years), under which the three contractors can each earn up to \$5B per year of a maximum \$15B per year award.¹⁶⁷

In addition, LOGCAP contracts are also awarded as cost-plus-award-fee instruments.¹⁶⁸ William M. Solis, the Director of Defense Capabilities and Management at the Government Accountability Office, explains the cost-plus-award-fee contract and its intended benefits.

Cost-plus-award-fee contracts entitle the contractor to be reimbursed for reasonable, allowable, and allocable costs incurred to the extent prescribed in the contract. The advantage of cost-plus-award-fee contracts is that they provide financial incentives based on contractor's performance and criteria stated in the contract. These contracts enable the government to evaluate a contractor's performance according to specified criteria and to grant an award amount within designated parameters. Thus, award fees can serve as a valuable tool to help control program risk and encourage excellence in contract performance. But to reap the advantages that cost-plus-award-fee contracts offer, the government must implement an effective award fee process.¹⁶⁹

An effective award fee process must include responsible contractor oversight in order to assess whether the contractor is meeting the standards specified in the contract. The next section describes the organization that surrounds, administers and oversees LOGCAP.

166. Government Accountability Office, "Decision on Kellogg, Brown and Root Services, Inc. Protest." Washington, D.C.: February 23, 2009, 2.

167. Commission on Wartime Contracting in Iraq and Afghanistan, "At What Cost?" Interim Report to Congress, Arlington: Commission on Wartime Contracting, June 2009, 39.

168. Hearing transcript: "LOGCAP Support-contracting Challenges in Iraq and Afghanistan," Arlington: Commission on Wartime Contracting in Iraq and Afghanistan, May 4, 2009, 7.

169. Government Accountability Office, "Defense Logistics: High-Level DoD Coordination Is Needed to Further Improve the Management of the Army's LOGCAP Contract," GAO 05-328, Washington, D.C.: March 2005, 6.

4. LOGCAP Administration and Oversight

Multiple DoD and service components share responsibility for managing and overseeing LOGCAP contracts. The Army Materiel Command is the executive agent for LOGCAP, and is responsible for coordinating LOGCAP requirements with the unified commands, other services, and Army-supported combatant commanders for Army Materiel Command contractor support. Army Materiel Command assigned responsibility for LOGCAP to the commander of Army Field Support Command, who has organized LOGCAP under three separate offices: the LOGCAP Program Manager; the LOGCAP Contracting Office; and the LOGCAP Support Unit.¹⁷⁰ Table 5 details the key contract management roles and responsibilities for the three LOGCAP offices.

Customers	LOGCAP Contracting Officer
<ul style="list-style-type: none"> • Develop requirements. • Write statements of work. • Obtain funding. • Monitor contract performance. • Evaluate technical performance. • Provide the award fee board with input. 	<ul style="list-style-type: none"> • Interprets the contract. • Obligates the government for work under the contract. • Delegates contract administration procedures to administrative contracting officers. • Provides the award fee board with input. • Definitizes the task orders
LOGCAP Support Unit	LOGCAP Program Manager
<ul style="list-style-type: none"> • Serves as the Army interface between the customer and the LOGCAP contractor. • Advises customer of LOGCAP capabilities. • Serves as on-site contracting officer representative as needed. • Deploys worldwide in support of any contingency using LOGCAP. 	<ul style="list-style-type: none"> • Provides LOGCAP central management. • Provides education and training. • Provides plan and budget for program resources. • Prioritizes planning requirements. • Partners with contractor to ensure responsive and flexible support. • Identifies emerging requirements. • Ensures statement of work's execution.

Table 5. Key LOGCAP Contract Management Roles and Responsibilities.¹⁷¹

LOGCAP is a multi-billion dollar contract that is awarded to three contractors that compete for fourteen task orders. Management and oversight of such a large contract is a

170. Government Accountability Office, "Defense Logistics: High-Level DoD Coordination Is Needed to Further Improve the Management of the Army's LOGCAP Contract," GAO 05-328, Washington, D.C.: March 2005, 6.

171. From: Government Accountability Office, "Defense Logistics: High-Level DoD Coordination Is Needed to Further Improve the Management of the Army's LOGCAP Contract." GAO 05-328, Washington, D.C.: March 2005.

major challenge, so DoD agencies augment the work performed by the Army Field Support Command. The Rock Island Contracting Center, DCMA, DCAA, the U.S. Army Corps of Engineers, the U.S. Army Reserve LOGCAP Support Unit and CORs within U.S. Army units manage LOGCAP through a collaborative effort.¹⁷² DCMA ensures that the cost, product performance, and delivery schedules comply with the terms and conditions of the contract by monitoring a contractor's performance and management systems. DCAA audits LOGCAP contracts and provides accounting and financial advice regarding Army Field Support Command contracts and subcontracts. DCAA also provides services regarding the negotiation, administration, and settlement of contracts and subcontracts.¹⁷³ Figure 15 depicts the command relationships and responsibilities of the organization surrounding LOGCAP.

172. Lee Thompson, Hearing transcript: "LOGCAP Support-contracting Challenges in Iraq and Afghanistan," Arlington: Commission on Wartime Contracting in Iraq and Afghanistan, May 4, 2009: 36.

173. Government Accountability Office, "Defense Logistics: High-Level DoD Coordination Is Needed to Further Improve the Management of the Army's LOGCAP Contract," GAO 05-328, Washington, D.C.: March 2005, 7.

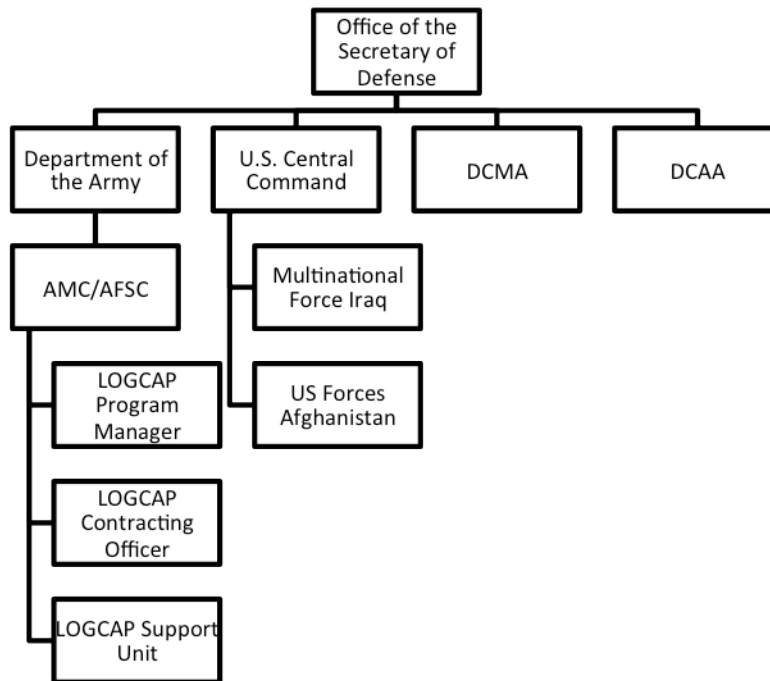


Figure 15. Organizational Structure for Management of LOGCAP.¹⁷⁴

5. Bulk Transportation–Theater Movement Contracts

Although the NATO fuel BOAs provide for theater fuel distribution, not all customers choose to take advantage of these services. Likewise the BOA cannot serve certain locations, such as RC East, because it lies outside of the BOAs area of responsibility. In order to provide theater-wide fuel delivery, the NATO Support Agency (NSPA) and the U.S. Joint Sustainment Command–Afghanistan (JSC-A) developed contract transportation solutions. NSPA provides a NATO bulk transportation contract managed by a commercial transportation brokerage company called XeLES. The NSPA system is very similar to a U.S. blanket purchase agreement; however, instead of soliciting directly from a supplier, NSPA contracts the XeLES Group as a middleman to solicit bids from various transportation subcontractors.¹⁷⁵ XeLES invoices NSPA who in turn invoices the ISAF customer for services provided. Contract oversight is provided in

174. From: Government Accountability Office, “Defense Logistics: High-Level DoD Coordination Is Needed to Further Improve the Management of the Army’s LOGCAP Contract,” GAO 05-328, Washington, D.C.: March 2005, 17.

175. Federal Acquisition Regulations, Subpart 13.3 ‘Simplified Acquisition Methods,’ accessed July 31, 2012, https://www.acquisition.gov/far/current/html/Subpart%2013_3.html#wp1092109.

part by NSPA employees, NSPA consultants, and through third party contractors acting as COR/COTR similar to the Cogeco contractors of DLA Energy.¹⁷⁶ NSPA covers its operating costs through a pre-negotiated processing fee that is levied during invoicing of ISAF customers. JFC HQ Brunssum maintains a similar brokerage-style agreement for commercial cargo airlift through the NATO Airlift BOA; however, no fee is assessed as assigned military personnel provide for the agreement's management and oversight.¹⁷⁷

Like NATO, USCENTCOM, through the JSC-A, has had to rely on contract solutions to make up for a lack of organic military units. The JSC-A awarded contracts for inland transportation and distribution support that also provided for fuel delivery. JSC-A relies on a variety of contract instruments with various companies; however, it has focused on a national and regional level concept that legally limits competition to Afghan businesses. The National Afghan Trucking contracts provide transportation service across Afghanistan, and rely heavily on security from private security companies, Afghan Public Protection Force, or U.S. Government security services. The Afghan Transportation Network (ATN) contracts represent a typical U.S. blanket purchase agreement, in that it fills anticipated repetitive needs for supplies or services by establishing charge accounts directly with qualified sources.¹⁷⁸ The ATN is regionally based, and relies on the influence of local Afghan leaders to provide secure transportation support. The most recent performance work statement of March 8, 2012, for expansion of ATN service to RC South and Southwest, sets the contract's primary objective as providing safe and reliable transportation for U.S. forces with minimal use of military assets.¹⁷⁹

176. Lieutenant Colonel U.S. Army (ret.) Brian McMurry, e-mail message to authors, July 30, 2012.; Lieutenant Colonel U.S. Army (ret.) Brian McMurry, telephone interview July 18, 2012.

177. For two years I managed the NATO Airlift BOA in coordination with our airlift broker Kuehne + Nagel Group based out of Frankfurt Germany. I acted on behalf of our NATO customers providing a requirement to the Kuehne + Nagel Group who then provided a subcontracted aircraft for our use. I in turn billed my customers and paid the Kuehne + Nagel Group for their services to include cost of the subcontracted aircraft. M.J.Evans

178. Federal Acquisition Regulations, Subpart 13.3 'Simplified Acquisition Methods,' accessed July 31, 2012, https://www.acquisition.gov/far/current/html/Subpart%2013_3.html#wp1092109.

179. Joint Sustainment Command–Afghanistan, "Performance Work Statement (PWS) Suite II Afghanistan Transportation Network (ATN)–Southwest/West," March 8, 2012, accessed July 29, 2012, <http://www.scribd.com/doc/92062744/Buying-Hearts-and-Minds-in-Afghanistan>, 2-4.; First Lieutenant U.S. Army Mary K. Blanchfield, "Transportation Challenges in Afghanistan," *Army Logistician* 37 (March-April 2005) accessed July 29, 2012, <http://www.almc.army.mil/alog/issues/MarApr05/afgan.html>.

The ATN contract uses Afghan owned and operated companies described as “Elder Owned Companies” that work in cooperation with influential local leaders to provide safe passage through the provinces and communities. The concept goes a bit beyond traditional contracting methodology, in that the requirement to use Afghan owned and operated companies is built into the contract to positively contribute to the ATN’s effectiveness as well as to achieve ISAF and GIRoA political requirements to eliminate the need for private security forces.¹⁸⁰ For fuel shipments, the JSC-A sets contractor allowances and penalties for missed delivery, delay due to requirement holder, contaminated shipments, excessive demurrage times, and lost fuel. While the requirement holder retains title of the fuel, the contract specifies that the contractor is held financially liable for all lost fuel. ATN contract oversight is provided by CORs stationed throughout Afghanistan.¹⁸¹

D. CONCLUSION

In reviewing the NATO ISAF fuel operation, two fairly distinct approaches to structuring contracts emerged. The NATO fuel BOA represented a single, integrated instrument that provided for contracted fuel operations from strategic acquisition through theater level operations. At the same time, the BOA provided an extreme example of contractor management of military support operations where contractors managed almost the entire NATO fuel supply chain. The BOA’s PPL was unique in that it allowed NATO logisticians to build and operate half of ISAF’s total fuel operation without having to invest upfront capital or resources. In contrast, U.S. fuel operations represented a more layered approach with multiple agencies that contributed to building and operating and overseeing the fuel supply chain. DLA Energy provided strategic acquisition and delivery with recent moves into theater level support, while U.S. theater commands and its service components provided the final portion of the U.S. fuel supply chain. Both approaches

180. Joint Sustainment Command–Afghanistan, “Performance Work Statement (PWS) Suite II Afghanistan Transportation Network (ATN)–Southwest/West,” March 8, 2012, accessed 29 July 29, 2012, <http://www.scribd.com/doc/92062744/Buying-Hearts-and-Minds-in-Afghanistan>, 2–3.

181. Joint Sustainment Command–Afghanistan, “Performance Work Statement (PWS) Suite II Afghanistan Transportation Network (ATN)–Southwest/West,” March 8, 2012, accessed 29 July 29, 2012, <http://www.scribd.com/doc/92062744/Buying-Hearts-and-Minds-in-Afghanistan>, 25–28.

have pros and cons, and certain aspects of risk are inherent. The following chapter builds on the review of NATO ISAF fuel history and contracting instruments, and analyzes the financial risks and political factors that influence decisions to use organic or contract fuel support.

V. RISK ANALYSIS

This chapter considers how political and financial risk influenced U.S. and NATO leaders' decisions whether to use organic fuel support forces or to hire contractors to do the job instead. Financial risks will influence political decisions, and vice-versa. In the case of strategic and multinational fuel operations, leaders must consider the cost of the product and its delivery, as well as the cost of managing the fuel supply system, including manpower and oversight. Political considerations will also influence a nation's decision as to whether it will use organic or contracted fuel support. Fuel support operations in OEF are influenced by the political environment within the United States and Allied nations, the nature of the conflict, the rules of engagement established in the AOR, and host nation interests and decisions. External political risk by international allies and stakeholders, such as Afghanistan and Pakistan, can also have direct and significant impact on operations. Political risk is also often self-imposed by politicians and decision makers, who may directly or indirectly impede operations through ill-advised policy decisions. In such cases, it seems that the only decision a nation can make is to mitigate the risks that previous policy decisions have forced them to accept. A more thorough and proactive risk analysis done earlier in the strategic planning process could help leaders avoid a great deal more problems and make more economical and politically wise decisions that would better prepare a nation's military for war.

A. RISK ASSESSMENT

U.S. and NATO planners performed a careful risk analysis that weighed the pros and cons of using either organic or contract fuel support for multinational operations in Afghanistan. The NATO ISAF fuel team's decision to hire contractors under the fuel BOA was an economic and political one, and was born out of necessity when no member nation would assume responsibility for providing fuel or fuel support to the Alliance. USCENTCOM faced risk by releasing control of fuel operations to a NATO staff when it decided to use the NATO fuel BOA. DLA Energy provided traditional bulk fuel support to combat forces until financial and political factors led it to begin tendering contracts for

tactical fuel support, much like the NATO ISAF fuel team did. Both the United States and NATO have relinquished significant degrees of control to contractors on the battlefield, and both considered significant financial risk and political factors when selecting the most effective course of action.

B. POLITICAL FACTORS CAN INCREASE OR MITIGATE RISK

The internal and external policies of decision makers and stakeholders shaped the organization, cost and effectiveness of fuel operations in OEF. A government's own internal policies, as well as its external policies toward managing sensitive international relationships, can either increase or mitigate risk and impact the success of operations. Within the United States, inconsistent policy regarding the strategic employment of its armed forces has practically forced military leaders to share more of the battlefield with and relinquish greater operational control to defense contractors. The U.S. and NATO strove to secure commitments from international partners who struggled with manpower, financial and material resources, and international pressure. Within NATO, varying capabilities and resources determined a nation's commitment to collective defense. NATO publications strongly encourage member nation commitment to communal support, yet also provide easy options for a nation to forsake the Alliance and provision for its own forces. Finally, both organizations fear that contractors may fail in their duties, despite a historically very dependable record of performance. Although internal politics are a variable that lie within a nation's control, external political factors are more difficult to predict and control. This section will describe how both internal and external political considerations can put fuel operations at risk.

When U.S. policy makers decided to fight a two-front war in 2003, they created the requirement for a greater number of contractors in theater, whether they liked it or not. Military forces were stretched thin overall, and an insufficient number of organic military logistics forces were available to support combat forces between Iraq and Afghanistan. When U.S. policy limited the number of troops in theater, commanders often decided to deploy a greater number of combat troops in lieu of support troops. As such, the U.S. government left themselves with no choice other than to rely on

contractors to provide vital logistics and fuel support to forward forces. As contractor requirements grew, U.S. forces became more dependent on contractor support, while the burden and expense of managing and overseeing the contractors continued to grow as well. As the number of support contracts grew beyond the capability to effectively manage and oversee them, defense officials and policy makers have continually debated how to fix the problem into which they have contracted themselves.

Within the U.S. government and military lies a duplicity and contradiction of opinion with regard to its level of dependence on contract support. On the one hand, contractors are extolled as a vital part of operations, while on the other hand they are vilified as corrupt war profiteers. During an April 2010 speech, U.S. General and ISAF Commander Stanley A. McChrystal provided a shining example of this duplicity.

‘I think that the use of contractors was done with good intentions, so we could live with a limited number of military [personnel]; in some cases, we thought we could save money,’ he said.

‘I think it doesn’t save money. I actually think it would be better to reduce the number of contractors involved, increase the number of military if necessary, and where we have contractors, in many cases, I believe we could stop using foreign contractors and use a greater number of Afghan contractors,’ he said. ‘We have created in ourselves a dependency on contractors that is greater than it ought to be.’¹⁸²

General McChrystal’s predecessor, U.S. General David McKiernan, attempted to reduce this dependency by deploying U.S. theater support forces into Afghanistan. However, when General McChrystal took command of ISAF and U.S. Forces Afghanistan, he reversed this approach in favor of more combat forces. Although General McChrystal expressed concerns about U.S. overdependence on contractors, he also sent home U.S.

182. Pierre Tran, “NATO Commander: Too many contractors in Afghanistan,” *Federal Times*, April 20, 2010, accessed July 14, 2012, <http://www.federaltimes.com/article/20100420/DEPARTMENTS01/4200307/NATO-Commander-Too-many-contractors-Afghanistan>.

logistics units that could have reduced that dependency.¹⁸³ Those higher-level policy decisions that established troop limits created the dependency on contractor support.

Duplicity exists even at the highest levels of U.S. national authority. In its final report, The Commission on Wartime Contracting in Iraq and Afghanistan heavily chastised the U.S. Congress for its role in this duplicity:

The role of Congress is critical. The problems identified in this report will not fix themselves, and cannot be fixed for free, or even cheaply. It is not enough for Congress to say, “There are too many contractors,” or “Some contractors are performing tasks reserved to the government,” or “We need better oversight of contractors,” or “We won’t have another big contingency operation.” Congress must direct and participate in serious reform.

Paying lip service to reform will not cure problems such as the Defense Contract Management Agency (DCMA) being under-staffed and at the mercy of temporary funding for many of its contract-management professionals. Nor will lip service help the Defense Contract Audit Agency (DCAA), whose backlog of incurred-cost contract audits has now grown to more than \$550 billion and will require years of work to reduce even if hundreds of new auditors were hired.¹⁸⁴

The Commission itself, however, fell into this same trap. The Commission ultimately concluded that U.S. agencies are over reliant on contractors and as such they have eroded organic “capacity to perform some mission-critical functions.”¹⁸⁵ However, the report is almost entirely focused on bettering contract operations and makes reference to reducing dependence on contractors in only two of its sixty-four recommendations to the U.S.

183. Colonel U.S. Army Jeffrey B. Carra, (Commander, 165th Quartermaster Group (POL), Fort Belvoir, VA and Camp Arifjan, Kuwait (2006–2009); Chief, Iraq Sub-Area Petroleum Office 2008–2009; Chief, Afghanistan Sub-Area Petroleum Office 2008–2009; Chief, Joint Petroleum Office, U.S. Central Command (2009-2010)), interviewed by Michael Evans, July 2, 2012, Interview Carra.mp3, Evans Private Oral History Collection.; As part of General McChrystal’s ISAF HQ Movement and Transportation Staff and later, as a NATO participant in the 2009–2010 USCENTCOM Movement Planning Conferences, I witnessed the U.S. policy limitation levied on USCENTCOM troop numbers and especially the U.S. support units in favor of combat forces. M.J. Evans.

184. The Commission on Wartime Contracting in Iraq and Afghanistan, “Transforming Wartime Contracting: Controlling Costs, Reducing Risks,” Arlington: Commission on Wartime Contracting, 2011, 167.

185. The Commission on Wartime Contracting in Iraq and Afghanistan, “Transforming Wartime Contracting: Controlling Costs, Reducing Risks,” Arlington: Commission on Wartime Contracting, 2011, 2.

Congress. In these two recommendations, the Commission advocated using risk analysis to determine if contingency contracting is required and suggested that U.S. agencies like, the DoD, should grow organic capacities.¹⁸⁶ Those decision makers who complained about an overreliance on contractors due to a shortage of organic manpower had the power to change it. Without action, those complaints were essentially about their failure to perform a proper risk analysis enroute to a wise and well-calculated decision.

In 2011, the senior logistics officers of the key troop contributing nations of ISAF expressed a growing concern about similar management issues. In a February 24, 2011 letter to JFC HQ Brunssum, they expressed their collective concerns about the fuel BOA.

In particular, we feel that nations who have a strategic equity in the delivery of fuel to this theater have limited influence in relations to key decisions regarding this vital commodity. Moreover, specific issues such as visibility over the pricing mechanism, contract performance indicators and supply chain velocity also appear to be vulnerabilities that are not addressed under the current fuel ‘contract.’

Given our growing concerns it may be useful to provide a level of assurance that the BOA is indeed delivering cost effective management of NATO fuel in Afghanistan to all nations. To this end you may find it helpful for the International Board of Auditor NATO (IBAN) to conduct an independent audit of fuel management and the structure of the BOA. We stand ready to provide assistance should you require.¹⁸⁷

Although these senior logisticians correctly identified key concerns within contract fuel management, the memorandum spoke to much larger issues internal to the Alliance. The letter inherently showed a perception of mistrust or fear about the lack of perceived control over the NATO fuel BOA. Because of the lack of organic logistics capability within NATO and the larger ISAF Alliance, the NATO fuel BOAs had to push contracted fuel support further into the operational battlefield than ever before. At the

186. The Commission on Wartime Contracting in Iraq and Afghanistan, “Transforming Wartime Contracting: Controlling Costs, Reducing Risks,” Arlington: Commission on Wartime Contracting, 2011, 176, 178.

187. Lieutenant-General Kathleen Gainey (Director JS-J4 USA), Major-General Jeff Mason (ACDS Log Ops GBR), Major-General Mark McQuillan (Commander CANOSCOM CAN), and Air Vice Marshal Margaret Staib (Commander Joint Logistics AUS) to Major General Hans-Erich Antoni (JFC HQ Brunssum DCOS Support), February 24, 2011, “Governance of NATO Fuel Management.” JFC HQ Brunssum Logistics Resources Branch, Logistics Operations and Plans Section Records Archive.

same time, a single U.S. Army Lieutenant Colonel, with at best a spartan support staff, centrally managed and provided oversight to this huge contracted fuel operation. It was a testament to the ability of the NATO ISAF fuel team, including the U.S. management team at DLA Energy and USCENTCOM, that their contractors met, and often exceeded COMISAF's fuel and infrastructure requirements at every turn. More important, this letter revealed a serious communication failure within the Alliance and the national chains of command.

Although it should have been, this letter was proffered without prior coordination with the primary NATO ISAF fuel operations stakeholders, such as USCENTCOM, COMISAF, COMIJC, the ISAF Regional Commands, or the National Military Representatives assigned to NATO. COMISAF exercised direct and complete control over the NATO fuel BOA. All requirements, fuel or infrastructure, came directly from ISAF to JFC HQ Brunssum for implementation through the BOA. The USCENTCOM J4 had direct input into all fuel related requirements through the JPO and SAPO and coordinated theater operations daily with the Brunssum and HQ IJC fuel staff. The JFC HQ Brunssum P&C staff published itemized fuel prices to the National Military Representatives and to each nation's financial institutions that paid BOA invoices. DLA Energy had a representative on staff at JFC HQ Brunssum and provided coordination on all fuel projects and BOA contractor operations. Additionally, each BOA had built-in pricing annexes and associated performance measures for both the contractor and the agreement owners at JFC HQ Brunssum. For their part, the British military manned the HQ IJC fuel office and also acted as contact embassy for diplomatic representation of NATO in Pakistan. Each National Military Representative received all logistics situation reports of fuel activities through the NATO reporting systems. Yet with this exceptional degree of transparency, information, and inter-Alliance coordination, the senior most logisticians of four key troop contributing nations held little working knowledge of the BOAs and even less information on the level of management and services that their nations maintained within and through the NATO fuel BOAs.

Miscommunication and mistrust is an unfortunate characteristic of Alliances and multinational operations. Major stakeholders questioned the administration of the fuel

support agreements and were suspicious of the contractors' ability to continue to provide support. The dependence on contract fuel support has led government and military officials to a fear that contractors will fail. Aside from the internal political factors that impacted military operations, external risks over which decision makers have less control proved to be a greater threat to contract fuel operations. One such external factor was whether Afghanistan's dangerous and limited LOCs could continue to handle the demands of fuel transportation and distribution. Senior ISAF transportation officers feared that LOC capacity would prove insufficient to handle the required traffic and could jeopardize military operations. Between 2008 and 2011, JFC HQ Brunssum, Logistics Resources Branch, Movement and Transportation Section conducted numerous unpublished studies on the capacity and vulnerability of the ISAF LOCs. The studies remain unpublished because NATO had no presence along any of the LOCs and early on had little actual contact with ISAF's six major border crossings. Data on LOCs came from personal assessment of unseen road and rail networks and depended heavily on contractor-provided LOC transit times and capacity evaluations.¹⁸⁸ U.S. Transportation Command provided data to assist in understanding LOC transit times; however, NATO transportation section's effort could not validate their fears of ISAF LOC capacity vulnerability.

The real factors surrounding LOC vulnerability was neither capacity nor contractor ability to deliver fuel, but the political capability of foreign nations to effectively close LOCs and isolate ISAF. The Government of Pakistan provided this example on November 26, 2011 when it closed the southern LOCs.¹⁸⁹ To mitigate this setback, the ISAF nations' political and diplomatic corps moved quickly to find alternate suppliers and LOC through the Northern Distribution Network, a series of commercial logistical arrangements through which fuel passed from Russia, Central Asia, and the

188. During my assignment to the HQ ISAF Joint Theater Movement Staff I had opportunity to chair the ISAF Boarder Crossing VTCs. While the meeting provided a forum for communication very little real data about ISAF LOC vulnerability could be gathered. We depended heavily on contractor provided information and JFC HQ Brunssum's LRB MTS relied heavily on our information. It was not until the end of 2009 that U.S. teams began actively monitoring border crossings. M.J.Evans.

189. Chief Master Sergeant U.S. Air Force (ret.) Donald Gullede (DLA Energy Representative to JFC HQ Brunssum), telephone interview, July 15, 2012.

Caucasus into Afghanistan. In addition, COMISAF mandated that ISAF maintain a 60 day supply of fuel in bulk storage to mitigate the southern LOC closure. The JFC HQ Brunssum Fuel Chief expressed concern about rail congestion with the increased traffic on the northern LOCs and the metering of rail cars imposed by the Uzbekistan transportation authorities. As with the previous NATO LOC studies, however, the fears of a northern traffic jam impacting NATO ISAF fuel operations would prove unfounded.¹⁹⁰ Figure 16 provides a snap shot of fuel levels before and after the southern LOC closure. With the exception of unleaded gasoline (F-67), ISAFs data reveals that fuel quantities actually increased during the Pakistan blockade. Even with these political maneuverings, ISAF fuel stock levels reached an all-time high despite the loss of two main LOCs.

190. Chief Master Sergeant U.S. Air Force (ret.) Donald Gullede (DLA Energy Representative to JFC HQ Brunssum), telephone interview, July 15, 2012.; Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) "Fuel Concept on ISAF," (Presentation to the Senior NATO Logisticians' for ISAF, Brunssum, The Netherlands. May 15, 2012).

Current situation PAK border closure

Stock level comparison in DOS

	FEB 2011	MAR 2011	FEB 2012	MAR 2012
F-34	33	36	47	49
F-54	36	36	40	56
F-18	57	44	120	148
F-67	37	55	32	30

Figure 16. Fuel Stock Level Comparison in Days of Supply (DOS) Before and After Pakistan Closed the Southern LOCs.¹⁹¹

Without political and diplomatic intervention by the United States and NATO on behalf of the contractor, it is very likely that adverse external political action could have impeded support to ISAF. Without their support, contractors had little recourse when sovereign nations closed international borders. Pakistan's closure of the southern LOCs provides a prime example of how external political factors could jeopardize fuel operations. However, Afghanistan's internal policies held a more significant risk.

A chief concern of both DLA Energy and NATO fuel BOA contractors was obtaining commercial business licenses from the government of the Islamic Republic of

191. From: Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) "Fuel Concept on ISAF," (presentation to the Senior NATO Logisticians' for ISAF, Brunssum, The Netherlands, May 15, 2012).

Afghanistan (GIROA) to operate within the country.¹⁹² Without business licenses, companies could not operate in Afghanistan. The problem of obtaining business licenses resulted from the opposing interpretations of status of forces agreements taxation policies held by the GIROA Ministry of Finance, U.S. Department of State and NATO legal representatives. U.S. Diplomatic Note 202 clearly stated that U.S. contractors and the services contracted were not subject to the taxes of GIROA.¹⁹³ Annex A of the ISAF Military Technical Agreement contained similar verbiage that extended tax-exempt status to ISAF contractors and their services.¹⁹⁴ However, GIROA officials in the Ministry of Finance and the Customs and Revenue Department began to dispute the original agreements, and provided their own interpretation of the U.S. Diplomatic Note 202 and the ISAF Military Technical Agreement (MTA). After years of discussion, the last formal letters of exchange in 2011 left the issue unresolved. GIROA held that the majority of contracted services, supplies, and personnel income were subject to GIROA law and were legally taxable.¹⁹⁵ ISAF has conceded certain points and understood that some aspects of contractor operations would be taxable.¹⁹⁶ Figure 17 provides the COMISAF interpretation of the MTA taxables. Because Afghanistan still lacks a sufficient tax

192. Chief Master Sergeant U.S. Air Force (ret.) Donald Gullede (DLA Energy Representative to JFC HQ Brunssum), telephone interview, July 15, 2012.

193. United States Department of State Diplomatic Note 202. "Agreement regarding the Status of United States Military and Civilian Personnel of the U.S. Department of Defense Present in Afghanistan in connection with Cooperative Efforts in Response to Terrorism, Humanitarian and Civic Assistance, Military Training and Exercises, and Other Activities. Entered into force May 28, 2003." In *Memorandum for Director of Defense Procurement and Acquisition Policy* from Charles A. Allen Deputy General Counsel (International Affairs), March 29, 2011, "Contractors in Afghanistan and Iraq—Assistance in Responding to Questions Regarding Taxation Under the Respective Status of Forces Agreements," accessed July 26, 2012, http://www.acq.osd.mil/dpap/pacc/cc/docs/Contractors_in_Afgh-Iraq-Assistance_in_Responding_to_Qs_RE_Taxation_under_Resective_SOFAs.pdf.

194. Military Technical Agreement Between the International Security Assistance Force (ISAF) and the Interim Administration of Afghanistan ('Interim Administration') December 5, 2001, British National Archives, accessed July 26, 2012, <http://webarchive.nationalarchives.gov.uk/+http://www.operations.mod.uk/isafmta.pdf>.

195. Minister of Finance Islamic Republic of Afghanistan Hazrat Zakhilwal to General U.S. Army Commander ISAF David H. Petraeus, letter, March 2011, "RE: 2011 COMISAF Letter of Interpretation," in The Supreme Group. "White Paper: Tax Affairs" (paper presented to the senior leadership of ISAF nations. April 26, 2012).

196. General U.S. Army Commander ISAF David H. Petraeus to His Excellency Minister of Finance Islamic Republic of Afghanistan Hazrat Omar Zakhilwal, letter, March 9, 2011, "2011 COMISAF Letter of Interpretation," accessed July 24, 2012, http://stability-operations.org/legislative/2011_afghantax_natoisaf_COMISAFloi.pdf.

collection system, GIRoA holds contractors responsible for payment of all taxes. In his final letter to the GIRoA Minister of Finance, U.S. General David Petraeus, Commander, USCENTCOM, sympathized with GIRoA's concerns and offered assistance in developing tax systems, but insisted that GIRoA was responsible for collecting taxes from its people, not from ISAF or its contractors.¹⁹⁷ The matter remains unsettled and has become leverage for GIRoA to withhold contractors' business licenses unless their tax demands are met.

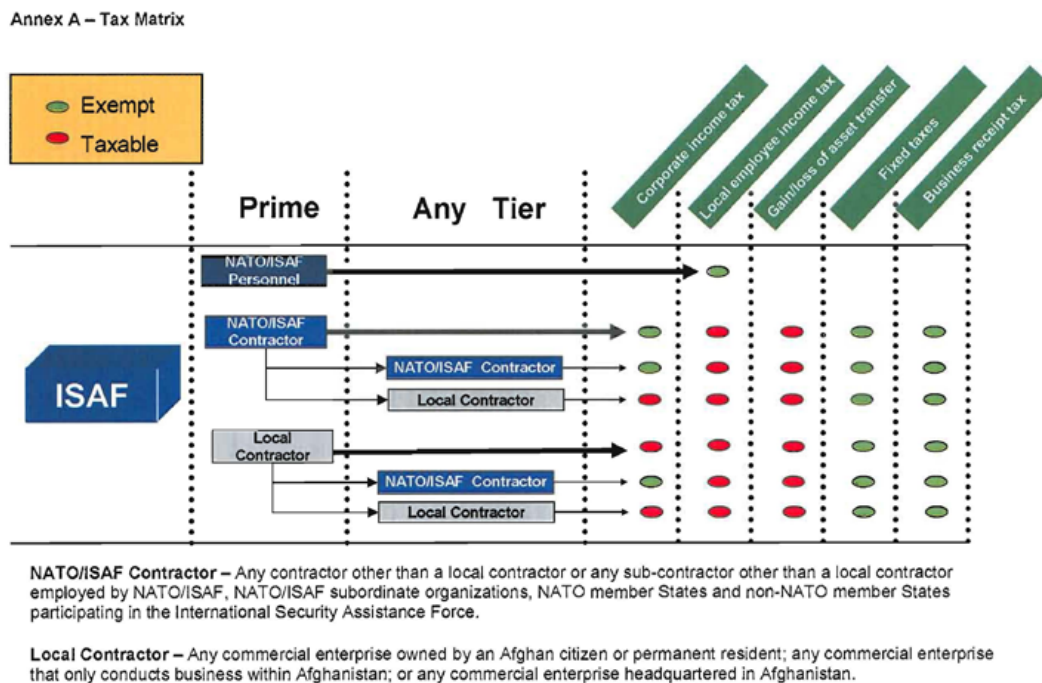


Figure 17. ISAF Interpretation of the Military Technical Agreement and Contractor Tax Obligation.¹⁹⁸

GIRoA first required companies to obtain business licenses in 2008. By direction of HQ ISAF and JFC HQ Brunssum, NATO fuel BOA contractors complied with these

197. General U.S. Army Commander ISAF David H. Petraeus to His Excellency Minister of Finance Islamic Republic of Afghanistan Dr. Omar Zakhilwal, letter, April 16, 2011, JFC HQ Brunssum Logistics Resources Branch, Logistics Operations and Plans Section Records Archive.

198. From: General U.S. Army Commander ISAF David H. Petraeus to His Excellency Minister of Finance Islamic Republic of Afghanistan Hazrat Omar Zakhilwal, letter, March 9, 2011, "2011 COMISAF Letter of Interpretation," accessed July 24, 2012, http://stability-operations.org/legislative/2011_afghantax_natoisaf_COMISAFloi.pdf.

new requirements; however, in 2009 GIRoA refused to issue new business licenses to the Supreme Group before all GIRoA-exercised taxes were paid. For more than a year, negotiations took place between Supreme and GIRoA, until Supreme made a good faith payment of \$11.2 Million to GIRoA against any possible future taxes owed so that it could continue to operate in Afghanistan. However, GIRoA demands upon Supreme continued to grow. GIRoA has enforced its interpretation of the MTA by disrupting LOCs through limiting customs documents, withholding of business licenses, seizing contractor assets and bank accounts, and limiting the freedom of movement of contractor personnel. In a series of recent meetings between Supreme and the GIRoA Customs and Revenue Department to settle these issues, GIRoA has requested an additional goodwill payment of \$11.5 million as collateral against the current tax audit being conducting on Supreme's 2005-2012 finances. The payment would enable Supreme to receive its tax clearance documentation required to renew its business license. Supreme has not made this additional payment and is currently embroiled in a running legal battle with the various GIRoA ministries to resolve the tax issues.¹⁹⁹

In a White Paper presented to ISAF leadership, The Supreme Group wrote that it has:

...overcome many problems in the ten years it has supported the ISAF effort in Afghanistan, but this is the most serious threat we have encountered to our continued ability to provide support to the allied forces. The problems that SG has encountered in recent weeks will inevitably affect all contractors supporting the international effort in Afghanistan. We believe that the time has come for the ultimate stakeholders in Afghanistan—the nations and international organizations—to take concerted action to resolve these issues.²⁰⁰

If COMISAF stands by his interpretation of the MTA and does not require contractors to pay GIRoA taxes, then he must actively engage GIRoA on behalf of NATO contractors to provide the necessary political leverage. But herein lies a critical shortfall within NATO; NATO has no embassy or diplomatic corps establishment to support COMISAF

199. The Supreme Group, "White Paper: Tax Affairs" (paper presented to the senior leadership of ISAF nations. April 26, 2012).

200. The Supreme Group, "White Paper: Tax Affairs" (paper presented to the senior leadership of ISAF nations. April 26, 2012).

thus leaving the NATO fuel BOA contractors to fend for themselves. While NATO lacks this capability, these same NATO contractors execute fuel contracts for the United States. Because they receive the full support and power of the U.S. Embassy and its diplomatic corps, they do not face the tax issues under the U.S. contracts. This divided political/diplomatic support to contractors has allowed GIRoA to leverage power over NATO and its contractors.

NATO contractors have complied with all local laws, but they have nonetheless been caught between GIRoA and HQ ISAF interpretations of international agreements. Contractors continue to comply with COMISAF intent while at the same time working through GIRoA interpretation of the MTA. NATO contractors could very simply comply with GIRoA intent and provide all tax liabilities requested. The increased taxes would ultimately drive a higher PPL for the NATO fuel BOA, but NATO ISAF fuel operations would remain secure. The current requirement for NATO contractors to refuse to pay GIRoA-interpreted taxes has been backed by insufficient political support from NATO. Meanwhile, NATO contractors continue in a state of limbo while awaiting NATO and U.S.-backed political decisions.

Although senior logistics leadership and other national leaders have expressed fears about overdependence on contractors, the actual probability of failure for fuel contractors has proven nil within ISAF support operations. In fact, it seems that contract operations are more at risk due to politics than to actions of the contractors themselves. In addition to internal and external political factors, the policies of senior defense leaders within the United States and NATO could also enable or jeopardize coalition operations. The NATO fuel BOA was developed by a very small staff and flourished despite the lack of support or buy-in of coalition leadership. The BOA was innovative and successful, but also unusual, which may explain why it never garnered enduring support or commitments from coalition leadership. Although initially successful, the BOA was undercut by policies that complicated and slowed a simple and efficient program.

ISAF nations' traditional practices of rotating personnel placed the effectiveness of fuel operations at risk. Normally, key logistics staff positions are turned over on average every two to three years, while deployment times are significantly shorter and

range from six months to 15 months. These rotations do not enable ISAF to build and maintain expertise, and have created a revolving door of leadership and oversight in the NATO ISAF fuel programs. Contrast this practice with that during WWII, when leaders and their staff normally remained in the same position throughout the war to ensure continuity. The four senior NATO logisticians who expressed their key concerns with the NATO fuel BOA, have since moved on to other positions or retired from their national staffs, and the leadership that replaced them has not shared their original concerns and focused their attention on other priorities. In addition, NATO nations have been reluctant to fill the key Fuel Chief position at JFC HQ Brunssum. Since May 2012, the United States has failed to source a replacement officer for the Fuel Chief position, and neither have JFC HQ Brunssum nor other nations appointed a temporary replacement. Theater level rotations impact operations in a similar way.

After General McChrystal took command of ISAF, he overturned his predecessor's policies by redeploying organic logistics personnel. His decision created a greater dependence on contractors, without increasing the number of theater staff or oversight personnel needed to balance contractor operations. While serving as ISAF Commander, U.S. General Petraeus engaged GIRoA officials to work through taxation and customs issues, while at the same time he discontinued key staff engagement procedures established by his predecessors. The Joint Coordination and Monitoring Board of ISAF that had previously resolved these logistics concerns with GIRoA has not been active since 2011. The resulting inactivity has left contractors pleading for help as is evident in the Supreme Groups' 2012 White Paper. Beyond senior leadership or staff rotation rates, the frequent rotation of COR/COTR in theater has had significant impact on contract oversight. By frequently changing these first line oversight managers, nations have placed themselves at a disadvantage in overseeing contractor operations.

NATO and U.S. officials' internal squabbles have created a risk for mismanagement, yet contract fuel operations have continued to provide fuel to military forces. The truth is that contractors have proven to be very capable of reliably providing fuel to ISAF. Until such time as nations build or expand organic logistics units, military operations will continue to depend heavily on contract fuel support. Because nations must

depend on contracted fuel operations, risk comes not from the contractors but from the inability to provide necessary political and diplomatic support to the contractors. While the contractors have proven they can perform large theater level fuel operations, there are still risks that contract costs could outpace the nations' financial capabilities and that poor contract management practices could lead to inferior contract performance and excessive and wasteful costs.

C. FINANCIAL RISK

Inasmuch as political factors determine whether a nation provides logistic and fuel support using organic or contract personnel, the consequences of those political factors may also impact the costs of either course of action. Policies determine the availability of and permission for personnel to provide fuel support in theater, which is a factor when deciding whether to send a U.S. Army fuel company or to contract a local truck from Pakistan to deliver fuel to FOBs. Although LOGCAP and additional transportation contracts cost the United States billions of dollars, the Commission on Wartime Contracting in Iraq and Afghanistan has concluded that contracting is often more cost effective than employing organic units to perform the same tasks.²⁰¹ Given the lack of organic logistics units to cover the requirements of current international engagements, Allied nations must consider the cost effectiveness of the contracts used to provide fuel to their fielded forces. DLA Energy can provide a gallon of gas to its customers for less than any of NATO's contractors. Although it would seem an easy choice for customers to determine where to spend their money, there are many other expenses that decision makers must consider when ordering its fuel.

Much more than the cost of the product alone is figured into the final price per gallon. In addition to the price of the product itself, fuel providers must also factor in the costs of additional personnel requirements, management and administrative costs, as well as the costs of oversight. The combination of these additional factors would increase the total cost of providing fuel, but the cost could be significantly lower if operations were

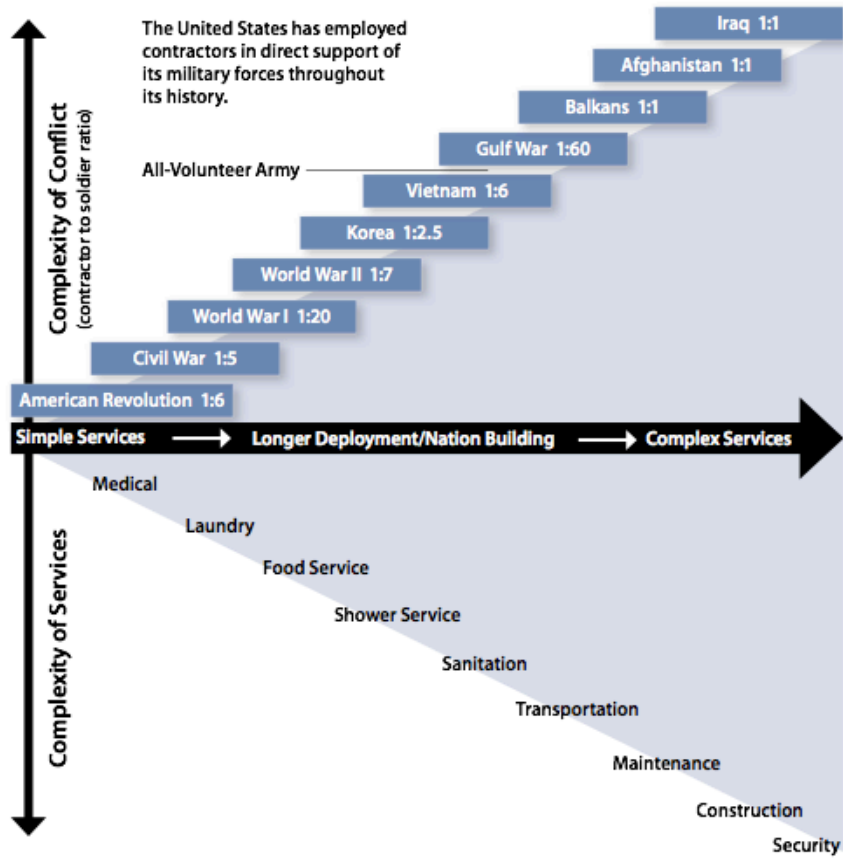
201. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, 2011, 235.

responsibly managed and overseen. Because of the strong reliance on contract support, it is more important than ever to effectively manage contracts in order to ensure taxpayer dollars are spent responsibly by ensuring contractors provide the services promised. This section will discuss the financial risks, such as personnel, management, and oversight, or lack thereof, to organic or contract fuel supply operations.

By increasing its worldwide defense posture and participating in long-term expeditionary operations such as OEF, the United States stretched its combat and combat support forces thin. At the same time, U.S. defense policy imposed a limit on the number of troops that would be allowed within the ISAF area of responsibility.²⁰² In order to accomplish all necessary support missions and to budget for more combat troops, the DoD has entrusted contractors to bear greater responsibility to support military operations. Figure 18 shows the increasing role that contractors have played in U.S. military operations while Figure 19 shows a corresponding view of the increasing military operations abroad. Not only does contract support enable the DoD to deploy a greater number of combat forces in theater, it also enables it to provide fuel support more efficiently and with less overall manpower. Regardless if troop limits had been imposed or not, using organic forces to deliver fuel to U.S. forces in ISAF would have required the U.S. Army to deploy 9,103 Soldiers and 2,760 fuel tanker trucks – 4 times more fuel trucks than the Army had in its entire inventory.²⁰³ These figures represent only the U.S. portion of theater level fuel requirements, which was half of the total ISAF fuel requirement.

202. During the 2009/2010 USCENTCOM Movement Planning Conferences for the 2010 U.S./NATO Surge, U.S. national policy set specific U.S. troop limitations. This forced commanders at all levels to prioritize combat forces ahead of support forces in order to meet the needs of the supported commander, COMISAF. M.J.Evans.

203. Jeffrey B. Carra and David Ray, “Evolution of Petroleum Support in the U.S. Central Command Area of Responsibility,” *Army Sustainment* 42, no 5. (September–October 2010), accessed June 4, 2012, http://www.almc.army.mil/alog/issues/SepOct10/petrol_support.html.

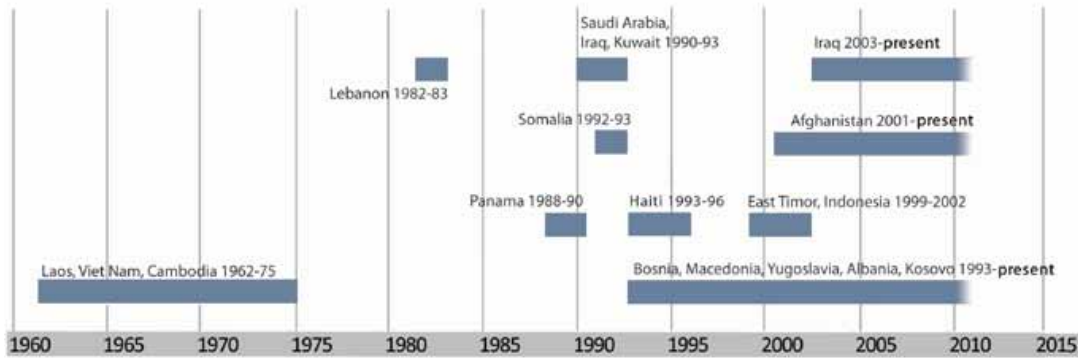


Source: Center for Military History (CMH), The Commission on Wartime Contracting in Iraq and Afghanistan, Interim Report, June 2009.

Figure 18. The Growth of the Contractors on the Battlefield.²⁰⁴

204. From: Richard Fontaine and John Nagl, *Contracting in Conflict: The Path to Reform*, Washington: Center for a New American Security, 2010, 9.

Figure 1. U.S. Forces Abroad, 1962 through 2011



Source: Commission analysis of CRS Report R41677, “Instances of Use of United States Armed Forces Abroad, 1798-2010,” March 10, 2011.

Figure 19. Major U.S. Military Operations Abroad Lasting More Than One Year.²⁰⁵

Cost risks are based on various figures and are important to leaders at all levels. Two key figures of concern to OEF stakeholders are DLA Energy’s “standard price” and the NATO fuel BOA PPL. The DLA Energy “standard price” is the worldwide flat-rate price per gallon for each commodity sold to DoD customers, and includes the fuel cost, inter-theater transportation costs, DLA Energy overhead costs, associated strategic fuels infrastructure, oversight programs, and personnel; however, it does not account for the costs to manage, store, and distribute fuel within the theater that are provided under LOGCAP and other contracts. The NATO fuel BOA PPL includes not only the standard price of fuel, but also all theater level infrastructure, personnel, inter- and intra-theater transportation, management, storage, and distribution services. The standard price and the PPL represent a pump cost such as at a local gas station, and are most relevant to a tactical customer because they are the price that they actually pay for a unit of fuel. The NATO fuel BOA PPL is all-inclusive and represents all associated costs for supplying and delivering fuel. The DLA Energy price, while much lower than the NATO fuel BOA prices, is not all-inclusive and does not represent the total cost of providing fuel to the tactical customer. Those additional costs can be most closely compared to the FBCF.

²⁰⁵ From: The Commission on Wartime Contracting in Iraq and Afghanistan, “Transforming Wartime Contracting: Controlling Costs, Reducing Risks,” Arlington: Commission on Wartime Contracting, 2011, 17.

The concept of the “fully burdened cost of fuel” (FBCF) warrants discussion early in this section regarding costs. The FBCF is a metric that attempts to determine the actual cost to the U.S. government to deliver a gallon of fuel to fielded forces. In response to the Duncan Hunter National Defense Authorization Act of 2009, which mandated that all defense related weapons systems purchases include the FBCF, defense officials, policy makers and academics have debated exactly what figures into it.²⁰⁶ The FCBF is defined as “the commodity price for fuel plus the total cost of all personnel and assets required to move and, when necessary, protect the fuel from the point at which the fuel is received from the commercial supplier to the point of use.”²⁰⁷ The FBCF even includes the cost of the fuel burned to transport the fuel to its final destination. With all the attention given to the FBCF, however, there is still no consensus on how to appropriately determine it, although estimates of the FBCF vary between nine and 45 dollars per gallon, depending on the situation.²⁰⁸ The FBCF is a relevant figure for determining the final cost of new systems for long-term acquisitions and budget strategies, but it overly complicates fairly simple logistics calculations. For the purposes of this thesis, however, the FBCF is an important concept to consider when comparing the DLA Energy price to the NATO fuel BOA price.

206. United States Congress. House Committee on Armed Services. *Duncan Hunter National Defense Authorization Act for Fiscal Year 2009: committee print of the House of Representatives Committee on Armed Services: joint explanatory statement to accompany S. 3001*. Washington: U.S. G.P.O., 2008. Accessed August 15, 2012.

207. United States Congress. House Committee on Armed Services. *Duncan Hunter National Defense Authorization Act for Fiscal Year 2009: committee print of the House of Representatives Committee on Armed Services: joint explanatory statement to accompany S. 3001*. Washington: U.S. G.P.O., 2008. Accessed August 15, 2012.

208. For the most recent cost estimations provided to the U.S. Congress for Afghanistan fuel see Moshe Schwartz, Katherine Blakely, and Ronald O'Rourke, “Department of Defense Energy Initiatives: Background and Issues for Congress,” Report to Congress No R42558 (Washington, DC: Congressional Research Service, June 5, 2012): 6–7, accessed July 28, 2012, <http://www.fas.org/sgp/crs/natsec/R42558.pdf>; The Commission on Wartime Contracting in Iraq and Afghanistan developed the most comprehensive breakdown of personnel costs related to U.S. fuel operations see their final report to the U.S. Congress, “Transforming Wartime Contracting: Controlling Costs, Reducing Risks,” Arlington: Commission on Wartime Contracting, August 2011, Appendix F.; For a non-government estimation of Afghanistan/Iraq fuel costs see Admiral (ret.) U.S. Navy John B. Nathman, “Powering America’s Defense: Energy and the Risks to National Security” (presentation at the Environmental and Energy Studies Institute Energy, National Security and Defense Department Solutions Conference, September 10, 2009) accessed July 28, 2012, <http://www.eesi.org/energy-national-security-and-defense-department-solutions-10-sep-2009>.

Although those additional costs above and beyond the DLA Energy standard price are of no concern to a tactical customer, they should be an important consideration for strategic decision makers within the DoD when choosing whether to provide traditional fuel support or contractor services. Because certain additional costs have already been absorbed by other agencies' budgets and personnel/manpower systems within the DoD, recalculating these expenses would be redundant and create an artificially inflated value.²⁰⁹ Because of this, and because of the difficulty in accurately determining the FBCF, there is no all-inclusive U.S. fuel price against which decision makers can compare the all-inclusive NATO fuel BOA PPL. That is of no consequence to the tactical customer, however; what concerns the tactical customer is the price of a unit of fuel on the invoice.

Figure 20 compares the cost of fuel provided by the United States and NATO in Afghanistan. All U.S. figures have been converted to liters. The two sets of lines, solid and dashed, compare DLA Energy, Supreme, and NCS jet fuel costs. The lower set compares the DLA "standard price" to the NATO contractor's landed costs, and shows that the DLA Energy standard price is far less expensive than that of either Supreme or NCS. The U.S. has tremendous buying power and influence over international fuel markets that makes it difficult for any nation or agency to provide comparable prices at this level. However, the NATO fuel BOA contractors provide fuel and all related services for a PPL, instead of simply the standard price alone.

209. Moshe Schwartz, Katherine Blakely, and Ronald O'Rourke, "Department of Defense Energy Initiatives: Background and Issues for Congress," Report to Congress No R42558 (Washington, DC: Congressional Research Service, June 5, 2012): 6, accessed July 28, 2012, <http://www.fas.org/sgp/crs/natsec/R42558.pdf>.

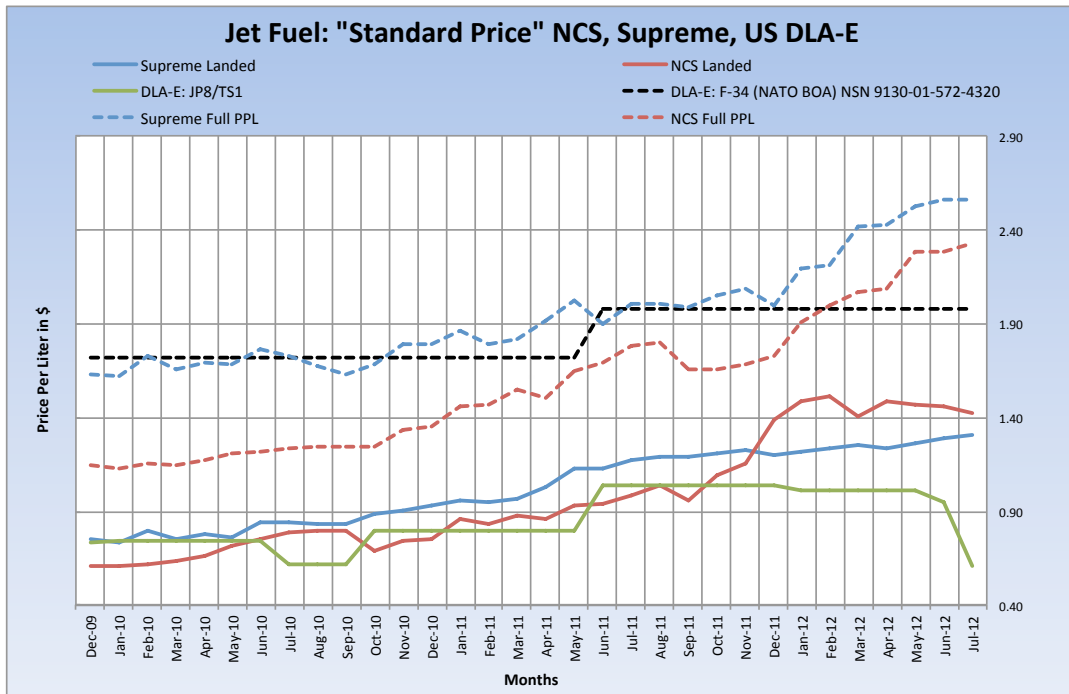


Figure 20. Comparison of DLA Energy, Supreme, NCS Fuel Costs, Current as of August 2012.²¹⁰

The top three lines of Figure 21 represent the actual cost of fuel invoiced by the NATO contractors and the price of fuel under the NATO fuel BOA as leveled by DLA Energy for its U.S. customers. The large disparity between the DLA Energy standard price and the NATO fuel BOA PPL has led some to questions whether NATO contractors were overcharging for fuel. Although DLA Energy’s fuel support may appear to be a better bargain, it carries significant additional costs that are not reflected in the standard price, whereas the NATO fuel BOA contract price is all-inclusive. The NATO fuel BOA PPL more accurately reflects their true “cost” of providing that service, while the DLA Energy standard price is what they “charge” to the customer, and not the actual total cost of a gallon of fuel to the U.S. government. Like the FBCF, there is no consensus on how to account for all additional costs above the DLA Energy standard price. Therefore, there

210. After: Major Royal Dutch Marechaussee Wouter van Koeveringe, (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) “Charts overall pricing Supreme and NCS 18-07-2012,” July 18, 2012; Defense Logistics Agency Energy, “DLA Energy Standard Prices,” http://www.energy.dla.mil/DLA_finance_energy/Pages/dlafp03.aspx, accessed August 26, 2012; The appendix at the end of this thesis provides the data used to calculate this chart.

are no means to compare an official U.S. price to that of the NATO fuel BOA contractor's prices. Figure 21 presents a compilation of representative FBCF calculations for U.S. and NATO fuel operations in USCENTCOM. The most conservative estimate of the U.S. FBCF is more expensive than the NATO fuel BOA. Although DLA Energy may be able to provide the least expensive gallon of fuel, no other nation or agency can currently match the cost savings provided by the NATO fuel BOA.

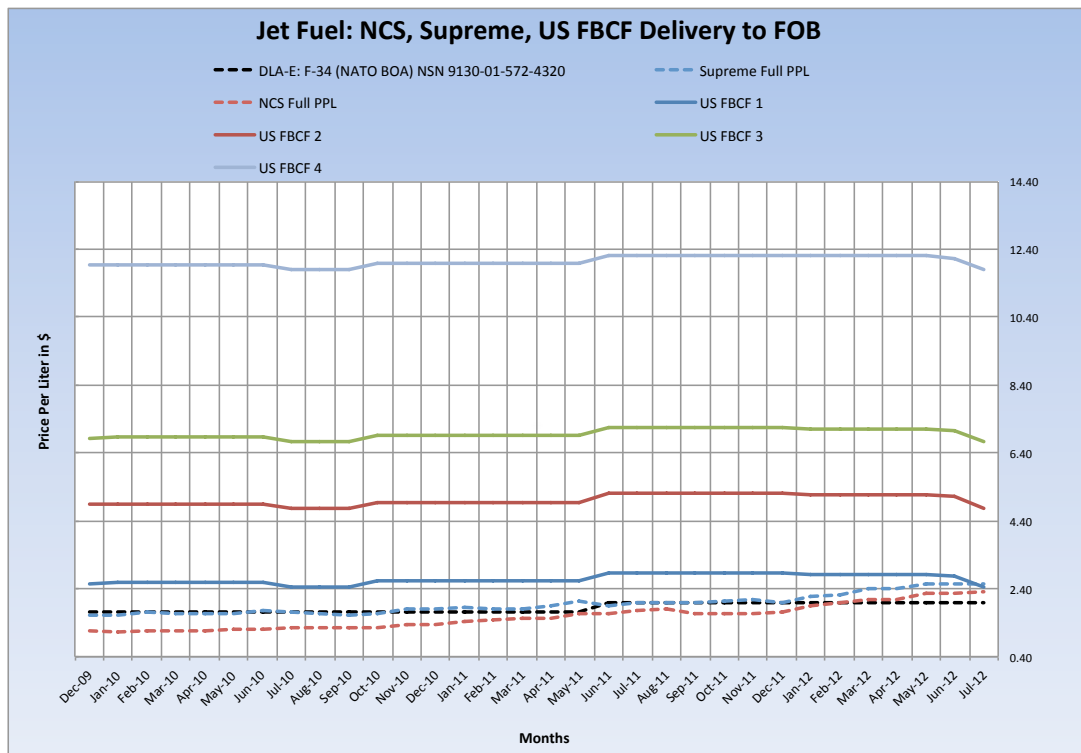


Figure 21. Cost Comparison of NATO PPL and U.S. FBCF Estimate Figures that Excludes FOB Costs.²¹¹

211. After: Major Royal Dutch Marechaussee Wouter van Koeveringe, (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) "Charts overall pricing Supreme and NCS 18-07-2012," July 18, 2012; Defense Logistics Agency Energy, "DLA Energy Standard Prices," http://www.energy.dla.mil/DLA_finance_energy/Pages/dlafp03.aspx, accessed August 26, 2012; Charles F. Wald, and Tom Captain, "Energy Security American's Best Defense: A Study of Increasing Dependence on Fossil Fuels in Wartime, and Its Contribution to Ever Higher Casualty Rates," Deloitte Development LCC, 2009, 19; Steve Siegel, Steve Bell, Scott Dicke, and Peter Arbuckle, "Sustain the Mission Project: Energy and Water Costing Methodology and Decision Support Tool," Army Environmental Policy Institute Final Technical Report, National Defense Center for Energy and Environment, July 2008, 8; The appendix at the end of this thesis provides the data used to calculate this chart.

For those member nations to which U.S. fuel support was unavailable, however, the NATO fuel BOA became the only viable solution. Not only was it cost-effective for the nation, but exercising the BOA appeared to be the only feasible method for NATO to overcome the drawbacks of lacking programmed funding, sufficient personnel, and a role specialist nation to plan and execute fuel support for member nations. Although the DLA Energy standard price outcompetes the NATO fuel BOA landed cost, U.S. forces may find that there are benefits to using NATO contract fuel support. Indeed, the DoD has long established policy, which advocates the use of NATO, host nation and contract logistics to enable U.S. forces to “live off the land” rather than drag along its own cumbersome logistics train. The decision for some U.S. units to use the NATO fuel BOA in 2009 was consistent with U.S. policy of mutual logistics support among NATO nations.²¹² The DoD also directs its components to “make maximum use of commercial and host-nation sources of supply to meet peacetime and wartime requirements” as well as to “minimize Government-owned fuel infrastructure on military installations to the maximum extent possible through the use of commercial assets and privatization of existing infrastructure...”²¹³ The practice of “hiring local” aids U.S. counterinsurgency efforts by boosting the local economy and employing young men who may otherwise participate in an insurgency because of their perceived lack of options.²¹⁴ By making greater use of contractors and host nation resources, not only does the DoD eliminate its long logistics trail and conserve resources, but it also keeps more U.S. service men and women, its “national treasure,” out of harm’s way.

As contractors share more of the battlefield with service members, they also share more of the risks of war. Regardless if leadership chooses to use organic or contract fuel support, both options run the significant risk of losing personnel, equipment, materiel and fuel product due to insurgent attack and transport over difficult terrain. Logistics convoys

212. Department of Defense Directive 2010.8, “Department of Defense Policy for NATO Logistics,” November 12, 1986.

213. Department of Defense Directive 4140.25, “DoD Management Policy for Energy Commodities and Related Services,” April 12, 2004.

214. Richard Fontaine and John Nagl, *Contracting in Conflict: The Path to Reform* (Washington: Center for a New American Security, 2010), 22.

are frequent targets of attack by ambush and improvised-explosive devices. U.S. Transportation Command estimates that ground convoys suffered over 1,100 attacks, while U.S. Army and U.S. Marine Corps officials estimate that between 10 and 20 per cent of battlefield casualties are related to ground resupply operations.²¹⁵ From 2003-2007, more than 3,000 U.S. servicemen and contractors were injured or killed in fuel supply convoys.²¹⁶ DoD officials reported that in June 2008, for example, 44 trucks and 220,000 gallons of fuel were lost due to attacks or other events.²¹⁷ Overall, more than 1,600 servicemen and 750 contractors have been killed in Afghanistan between 2003 and 2011.²¹⁸ The U.S. has paid a heavy price for its dependency on fuel and on contract logistics, both in lives and in dollars. Whereas relying on contractors can reduce the cost on service members' lives, improving management and oversight of contracts can also save the government millions, if not billions, of dollars.

Choosing and managing contracts wisely can mitigate the risks and costs of failure. By its nature, the NATO fuel BOA represents a theoretical single point of failure risk. The BOAs employ two major companies, but one of them, Supreme Fuels GmbH & Company KG, supplies 85 percent of all fuel to NATO.²¹⁹ Because the BOAs are inclusive agreements, the greater portion of NATO's ISAF fuel stocks, distribution network, and infrastructure management are dependent on the success of a single company. The concept of a single point of failure can be misleading, however. NATO contractors, like Supreme Fuels and Nordic Camp Supply, are brokers of fuel services.

215. Moshe Schwartz, Katherine Blakely, and Ronald O'Rourke, "Department of Defense Energy Initiatives: Background and Issues for Congress," Report to Congress No R42558 (Washington, DC: Congressional Research Service, June 5, 2012): 12, accessed July 28, 2012, <http://www.fas.org/sgp/crs/natsec/R42558.pdf>.

216. Moshe Schwartz, Katherine Blakely, and Ronald O'Rourke, "Department of Defense Energy Initiatives: Background and Issues for Congress," Report to Congress No R42558 (Washington, DC: Congressional Research Service, June 5, 2012): 12, accessed July 28, 2012, <http://www.fas.org/sgp/crs/natsec/R42558.pdf>.

217. Government Accountability Office, "Defense Management: DoD Needs to Increase Attention on Fuel Demand Management at Forward-Deployed Locations," GAO 09-300. Washington, D.C.: February 2009, 8.

218. Catherine Lutz, "U.S. and Coalition Casualties in Iraq and Afghanistan," Brown University: Watson Institute, June 13, 2011: 1, accessed August 20, 2012, <http://costsofwar.org/sites/default/files/articles/11/attachments/Lutz%20US%20and%20Coalition%20Casualties.pdf>

219. Chief Master Sergeant U.S. Air Force (ret.) Donald Gullede (DLA Energy Representative to JFC HQ Brunssum), "NATO BOA Fact Sheet," e-mail to authors October 27, 2011.

They act as parent companies that coordinate a fuel supply network, and mitigate the risk of failure by diversifying fuel sources, transportation providers, and construction and maintenance firms.²²⁰ The risk of a company like Supreme failing through internal risk is quite limited compared to the risks it cannot control, such as political, environmental and terrorist threats.

DLA Energy mitigates this single point failure risk by building multiple layers of strategic and tactical contracts that spread the U.S. ISAF fuel system across various contractors. Because of this redundancy, management and oversight responsibility is more widely spread among independent U.S. agencies such as DCMA and DCAA. In contrast, oversight of the NATO fuel BOA remains in the hands of a single agency. NATO must focus its efforts on ensuring the survivability of a single, critical company while the United States must concentrate its work on integrating oversight of multiple contracting efforts. In both approaches to contracting, proper management becomes key to mitigating risk. Improper manning or lack of skilled management and audit personnel imposes greater risk associated with the probability of failure than the default of a contractor.

The number of contractors in theater has grown faster than the government's ability to effectively manage and oversee them. The improper manning of management and contracting staffs has created a high risk of waste, fraud and abuse, and has actually increased dependence on contractors to oversee contracts. Lack of sufficient manpower and appropriate training has led to such systemic problems as inadequate planning, weak management and oversight of contractor performance, and insufficient recovery of over-billings or questionable costs.²²¹ As a result of these systemic problems, the U.S. Commission on War Time Contracting (the Commission) estimates that \$31 to \$60 billion out of a total of \$206 billion spent on contracts was wasted in Iraq and

220. E-mail conversation between M.J. Evans and Mr. David Williams (Supreme Liaison to JFC HQ Brunssum) regarding Supreme risk management practices; Supreme Group declined to comment.

221. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, 2011, 83.

Afghanistan between 2002 and 2011.²²² In contrast, NATO has not had the same level of oversight or audits as the U.S. contracting community. The NATO ISAF fuel team has depended heavily on the self-policing of contractors, so there is much unknown about the practices of the contractors and the operation of the NATO fuel BOAs. The only audit of the NATO fuel BOAs was recently conducted by the International Board of Auditor NATO and has not been publicly released.

The Commission's 2011 report to the U.S. Congress noted that U.S. contracting staffs were severely undermanned.²²³ Although the U.S. Army contracting corps retained a steady number of personnel from 1996-2005, the number of contract actions increased 654 per cent while contract value increased 331 per cent.²²⁴ There is an insufficient number CORs in theater, and many complain of not being given enough time to oversee contracts as they often serve in that capacity as a secondary duty. In addition, many CORs are not acquisition professionals, and are not afforded appropriate training before deploying to theater.²²⁵ Not only were many personnel poorly trained, but frequent rotations in theater impacted contract management effectiveness. Short duration deployments did not afford enough time to gain or to retain a competent level of expertise in theater. The Commission's report noted that short deployment cycles have put military and civil service personnel at a disadvantage to contractors, who tend to have more continuity, time in theater and knowledge of contracts and agreements.²²⁶

222. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, 2011, 5.

223. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, 2011, 115, 121.

224. Richard Fontaine and John Nagl, *Contracting in Conflict: The Path to Reform* (Washington: Center for a New American Security, 2010), 14.

225. The Commission on Wartime Contracting in Iraq and Afghanistan, "At What Cost?" Interim Report to Congress, Arlington: Commission on Wartime Contracting, June 2009, 9-13.

226. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, 2011, 118.; This same concern over high rotation rates was related in the interviews with Wing Commander (ret.) Orr, LTC Santiago and Chief Master Sergeant (ret.) Gullede. M.J. Evans.

Because of insufficient manning and short deployment lengths, both the United States and NATO have been forced to contract for audit and oversight services. When NATO leadership sought a third-party contractor to audit and oversee the BOA, they further increased their dependency on contractors. Manpower shortfalls have also severely impacted the effectiveness of other DoD agencies. Between 1990 and 2006, DCMA workforce fell 60 per cent while the DoD relied on contractors more heavily than ever.²²⁷ DCAA's personnel shortfall has delayed recovery of millions of dollars of possible overpayments to contractors. In addition, it has created an audit backlog that, at current staffing levels, will "continue to grow virtually unchecked and will exceed \$1 trillion in 2016."²²⁸ Personnel shortfalls also prohibit the effective oversight of sub-contractor performance, which contributes to waste. In one disappointing example, Afghan contractors that were hired under the Host Nation Trucking program hired Afghan private security contractors to protect its convoys. The subcontractor's preferred method of securing the convoys was to pay the insurgents or warlords who control the roads the convoys must use.²²⁹ The Commission estimates that, next to the Afghan illicit drug trade, "extortion of funds from U.S. construction projects and transportation contracts is the insurgent's second-largest funding source."²³⁰ As part of its effort to improve contract oversight and reduce the cost of waste, fraud and abuse, the DoD will have to greatly increase the number of qualified CORs and defense contract oversight specialists.

Without organic military units to provide fuel support, the United States and NATO must depend on contractors if they wish to employ their forces abroad. The luxury

227. Richard Fontaine and John Nagl, *Contracting in Conflict: The Path to Reform* (Washington: Center for a New American Security, 2010), 73.

228. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, 2011, 162.

229. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, 2011, 163.

230. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, 2011, 162.

of maintaining WWII levels of theater support forces and control over the petroleum industry is currently not politically feasible. Some within the United States have even called for reinstating the military draft, but implementing a draft would not ensure that those forces will be allocated to logistic services, and may not address equipment shortfalls or national level imposed theater personnel limitations.²³¹ In its final report, the Commission on Wartime Contracting in Iraq and Afghanistan recommended fifteen actions that Congress must take in order to improve the structures, policies, and resources for managing the contracting process and contractors, and to reduce fraud, waste and abuse. Leadership can do much to alleviate these problems by making wise decisions, by adhering to consistent and responsible policy, and by committing to building the manpower pool in order to responsibly oversee the contracting infrastructure it has created.

D. CONCLUSION

DLA Energy and NATO negotiated political and financial risks in a manner in which they felt would best benefit their mission to provide fuel to their forces in theater. One can compare the risks against the decisions that each entity made given its situation. Duplicitous politics within the United States demanded more from its military forces and contractors without allocating enough manpower to perform the mission properly. The financial impact of those decisions led to billions of dollars of waste. Despite those facts, fuel support operations were not cost prohibitive, even as the United States spent billions more than it had to in order to supply fuel and logistics solutions to its forces in OEF. The NATO ISAF fuel team found perhaps the only solution to their fuel support needs. Without funding and member nation commitment, it developed the BOA to provide a cost-effective and innovative fuel support solution. Nations could afford the pay as you go system, but could not afford to invest its national and financial treasures to support their operations in traditional ways. Their solutions fit the situation in which each entity found itself. Although both had its pros and cons, perhaps the lessons learned from one

231. Josh Rogin, "McChrystal Says It's Time to Bring Back the Draft," *Stars and Stripes*, July 6, 2012, accessed July 15, 2012, <http://www.stripes.com/news/army/mcchrystal-says-it-s-time-to-bring-back-the-draft-1.182321>.

approach can be used to improve the other. Or perhaps one approach is more applicable in certain situations than the other. Could the NATO fuel BOA be the new standard for multinational fuel support operations? Could the NATO fuel BOA be successful in, and could it be adopted for, U.S. unilateral operations? Or was it an anomaly that it was as successful as it was in OEF? The U.S. and NATO plan to leave Afghanistan by 2014, but there certainly will be more contingency operations to fight in the years that follow. In order to provide the most consistent and cost-effective strategy for future conflicts, we must take the best from the current conflict and apply those lessons learned in the next one. The next chapter will attempt to answer the questions posed above, and will provide policy recommendations for improvements for future contingency fuel operations.

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VI. CONCLUSION

A. THE NATO FUEL BOA: AN ISOLATED ANOMALY?

The purpose of this thesis is to capture the history of the NATO logistics operation to supply fuel to ISAF, to highlight the success of and capture the lessons learned from the NATO fuel BOA, to understand the context of the NATO ISAF fuel case study as compared to similar historical examples of large-scale multinational fuel efforts, and to provide a model of logistic fuel support for future multinational and U.S. operations. Future conflicts will arise as national interests are threatened, and the nature of those conflicts will vary as a result of leadership decisions, the operating environment, military capabilities and availability of national resources. The BOA has been useful and versatile in the current multinational Allied conflict, and may well be a valuable option for future conflicts. U.S. fuel operations have not failed, but may benefit from applying the lessons learned from NATO ISAF fuel operations. By taking the best features of each process and strengthening current shortcomings, the United States can improve the efficiency and cost effectiveness of its current fuel support process. Unique strategic solutions must be driven by the nature of future conflicts. Regardless which approach is chosen, none will be as potentially successful without leadership-driven management and oversight. The final chapter reviews the creation of the NATO fuel BOA, discusses lessons learned, considers its suitability for the future, and provides recommendations for improvements to U.S. military fuel operations.

The NATO fuel BOAs were born of necessity in a unique environment, but they also represented the inevitable end of a progression that began in WWII. The nature of the petroleum industry created a unique relationship between nations and industry. National control of industry was strongest during WWII, yet the Allied nations still depended heavily on their commercial partners' expertise to extract, refine, and deliver petroleum products to theaters of war. The earliest beginnings of NATO showed that nations placed a primacy on national sovereignty. This led to years of national and Alliance policies that reduced organic logistics capabilities within national forces and the NATO command.

In addition to the historical context that has led to this option, Allied logistics decisions in OEF empowered NATO to create the fuel BOA. The NATO fuel BOAs emerged, in part, as an isolated anomaly as a result of these decisions. Key elements created a permissive context where NATO became a logistics role specialist nation that was on scale with its member nations, yet independent from the influence of their individual national policies. NATO accepted responsibility for the APODs at Herat, Kandahar, and Kabul, because no ISAF nation would provide the required fuel logistics for the airfields. To support the APODs, JFC HQ Brunssum chose to offer a BOA for fuel support instead of utilizing the more traditional logistics services that NSPA had long offered to NATO. The uniqueness of the NATO fuel BOA's PPL system had a disarming effect on traditional NATO politics surrounding its military and political headquarters in Mons and Brussels, Belgium. The PPL allowed a small group of military and civilian logisticians to expand the NATO fuel BOA network with little to no political interference.

The U.S. return in force to ISAF in 2009 provided the final contextual element. USCENTCOM made a conscious choice to use the NATO fuel BOA instead of DLA Energy services for its new force deployments. As part of this decision, USCENTCOM and JFC HQ Brunssum agreed to expand the NATO fuel BOA beyond the APODs and provided fuel service to the FOB level. Fuel distribution immediately doubled and continued to increase, while outreach extended further to an ever-widening tactical customer base. U.S. logisticians who were assigned to NATO facilitated the growth of the BOA, and reassured USCENTCOM and national leadership that they could consider the fuel BOA to be on par with DLA Energy's fuel program. Figure 22 shows the resulting spike in NATO fuel BOA operations in 2009, and the subsequent growth that came with increasing forces and expanded service to ISAF FOBs. In the end, the BOA proved to be flexible, capable, and cost efficient.

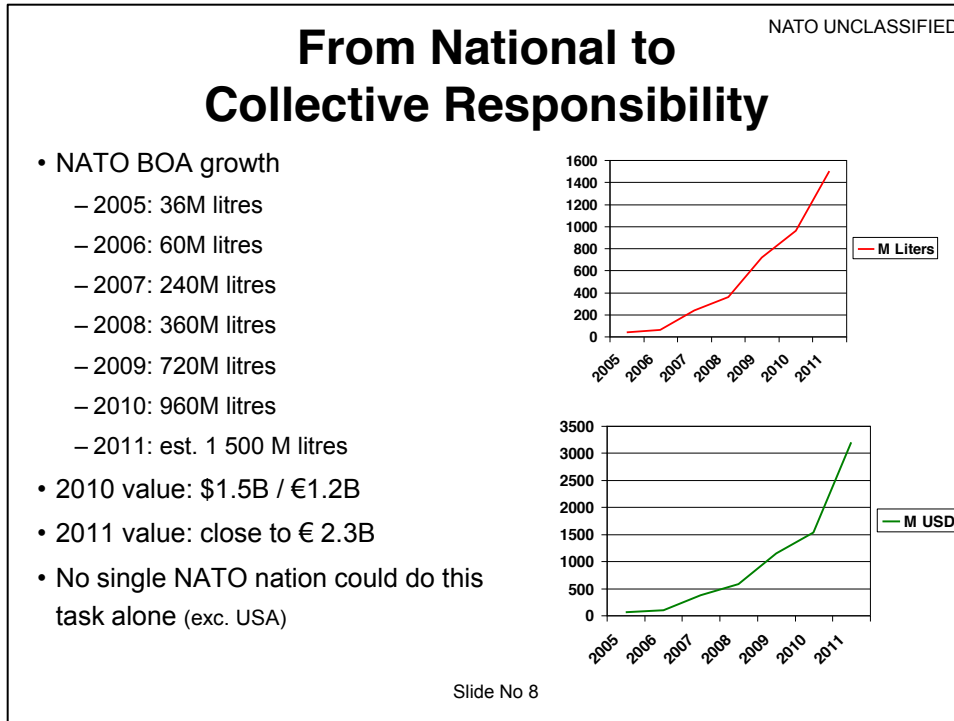


Figure 22. NATO Fuel BOA Growth from 2005 to 2011.²³²

B. BOA CONCEPT FOR FUTURE COALITION OPERATIONS

The emphasis on contract fuel operations was inevitable due to the progression of the Alliance defense establishments and the ability of fuel contractors to execute large-scale logistics for the Alliance. The international commercial fuels industry has long been able to execute large-scale worldwide operations across hostile LOCs and within violent theaters of war, and is well suited to support national and Alliance fuel operations. There are now as many contractors in the OEF theater of operations as there are uniformed service members and, like their WWII counterparts, they have accepted their share of risk to accomplish the mission. In their final submission to the U.S. Congress, The Wartime Commission on Contracting in Iraq and Afghanistan noted that “contractor deaths,

232. From: Lieutenant Colonel U.S. Army Eduardo Santiago (JFC HQ Brunssum Fourth Fuel Chief Executing the BOA) “Fuel Concept on ISAF,” (Presentation to the Senior NATO Logisticians’ for ISAF, Brunssum, The Netherlands, May 15, 2012).

including local and third-country nationals, exceeded the military's in both countries" between June 2009 and March 2011.²³³

The NATO fuel BOAs provided a tangible example of contractor reliability, as well as NATO's ability to conduct logistics operations. The BOA became successful in part because it may have been the only option that would enable NATO to provide fuel to ISAF nations. With no funding from the NATO common budgets, and no personnel commitment from member nations, the BOA enabled tactical customers to elect to receive fuel with no upfront costs. The BOA also owed its success to the unique personalities who managed the BOA at the right time and with the right connections to the U.S. logistics system and agencies. NATO proved the worth of a BOA and what a small team could accomplish; however, the political climate of NATO has changed little since Field Marshal Montgomery's days.

Over the course of the past months, the continued vacancy of the JFC HQ Brunssum Fuel Chief position has shown the weakness of personality-based success. The NATO fuel BOA has been compromised because NATO's multinational politics has impeded fulfillment of this key position. Senior leadership within JFC HQ Brunssum and the NATO HQs at Mons and Brussels in Belgium are currently making decisions about the future of the fuel BOA. Many of these nations' representatives have no stake in the BOA or ISAF other than their designation as NATO staff officers. Now that these more traditional NATO political bodies are moving to control it, the NATO staffs may find that the NATO fuel BOA is too great a task, and may quickly find means to remove the fuel BOA from their burden of staff work.

This process has already started as the NATO staffs, against the advice of the JFC HQ Brunssum fuel staff and DLA Energy, have begun to seek a transfer of the NATO fuel BOA to NSPA. Negotiations are currently ongoing for transfer of contractor oversight to NSPA with options for a possible transfer of all BOA operations to

233. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, August 2011, 31.

NSPA.²³⁴ Although NSPA has the manpower and capability to manage NATO fuel BOAs, transfer of agreement ownership will not relieve the core problem of poor top-level logistics leadership within the NATO political and military chain of command. NATO has failed to properly manage high personnel rotation rates within the staffs, and it has not rectified the lack of manpower for key positions, nor has it addressed the diplomatic requirement to support contractors' work within Afghanistan. In addition, U.S. patronage of the NATO fuel BOA was decisive in its success. U.S. logisticians provided the key personnel and liaisons to the JFC HQ Brunssum staff that enabled the NATO fuel BOA to succeed. Without the active support of its largest customer, the NATO fuel BOA cannot flourish as it once had. While the NATO fuel BOA showed that a NATO military staff could successfully manage and conduct long-term, larger scale logistics operations, the personalities who made it successful, its supporting patron, and the contextual setting cannot be guaranteed in future NATO staffs.

BOAs on the scale of the NATO fuel BOA will not be manageable unless they are managed by an organization with robust infrastructure and capable, responsible leadership. Because of reduced NATO manpower, command capabilities, and lack of national support, BOAs within the current system of NATO leadership will only be sustainable on small scale, short-term operations that focus on supporting NATO expeditionary headquarters. Large-scale theater logistics operations are best conducted by a willing role specialist nation, under a single national commander with the required strategic and theater capabilities to support fielded expeditionary forces, whether they are organic fuel support forces or contract personnel. In the absence of a willing role specialist nation and capable NATO command leadership, NSPA's stable staff and logistics capability present the best alternative to the NATO command or the NRF logistics staffs. With proper manning, and leadership-driven management and oversight, the United States may find features of the BOA useful in developing a cost-effective and efficient alternative for future U.S.-led operations.

234. Lieutenant Colonel U.S. Army (ret.) Brian McMurry, telephone interview, July 18, 2012.

C. ADOPTING THE BOA FOR U.S.-LED OPERATIONS

For the same reasons they were successful for ISAF, BOAs with fuel contractors could be an efficient and economical option for logistics planners in U.S.-led operations. In order for a fuel BOA to be an effective and efficient instrument, regardless of the scale and duration of conflict, it must have the advocacy of military and national leadership and must be managed responsibly. It is difficult to argue whether the NATO fuel BOA is more cost effective than DLA Energy fuel operations because the FBCF is so challenging to accurately estimate. However, the data representing the strategic U.S. estimates of the FBCF in the Appendix show that the BOA may be a smarter economic choice because it removes the requirement to fund all the additional costs of providing organic forces and infrastructure to supply fuel. Granted, DLA Energy and the U.S. military must remain prepared for a variety of security situations and cannot completely forsake their organic fuel assets or contingency storage requirements. As such, there will always be additional costs for which to account.

That said, contractors, who have proven their worth throughout history, can enable the United States to largely eliminate its hefty logistics trail in theater. Not only would this option enable the United States to save money on equipment and infrastructure, but it would also allow it to apply a greater number of its military forces in combat roles. Other costs savings could come from continuing to buy bulk fuel “free-on-board destination” to hedge against delays in delivery and product loss. Like the NATO fuel BOA, there would be no upfront costs, and the title of fuel would remain with the contractor, who absorbs the risk of loss until the fuel is delivered to the customer. In addition, DLA Energy can use its position as the world largest consumer of fuel to negotiate the lowest aggregate price of fuel possible for the tactical consumer. The U.S. can also leverage its technological strength and lead position in international politics in order to negotiate and overcome any limitations imposed by environmental or external political constraints.

DLA Energy and the DoD are well capable of overcoming one of NATO’s major shortcomings in management of the BOA: understaffing and lack of a lead role specialist nation. DLA and DLA Energy have built decades of institutional knowledge and

expertise as the DoD lead for logistics, and have robust staffs worldwide to handle the work. DLA Energy liaisons are embedded in the U.S. military's geographic combatant commands and can provide the support it would need to execute operations in any theater. Because of their relationship with industry and adept understanding of international fuel markets, contracting and oversight, DLA Energy is well suited to lead fuel procurement, contracting, distribution and oversight. Although the authors have criticized the DoD's ability to provide responsible contract oversight, there is hope and direction for reform. The organizations and procedures are in place, but leadership has neither adequately staffed critically low contract oversight positions, nor enforced contracting instructions. Leadership alone is responsible to create change, and they must push for increases in well-trained manpower, and improvements in contracting integrity and contractor accountability in order to provide economical and effective contract solutions.

Since the latter half of the 20th century, the gap between the number of contractors to uniformed service members in the theater of operations has closed. As the number of contractors has increased, the numbers and capabilities of DoD contract managers, auditors, contracting officers and contracting officer representatives has failed to keep pace. As a result, there has been too little oversight of defense contracts which has led to mission failure and billions lost due to waste, fraud, and abuse. The Commission on Wartime Contracting in Iraq and Afghanistan has recommended, among many other measures, that the DoD must increase the number of qualified and trained contract management specialists.²³⁵ The key to this contract reform is sound, responsible leadership.

Regardless if top decision makers choose to continue using organic military fuel support or if they choose to use contract support more extensively, only strong leadership will make either option efficient and successful. Both options would require an increase in personnel which only national-level leadership can prioritize and authorize. As it

235. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, August 2011, 168..

stands, DCMA and DCAA are sorely understaffed and have years of backlogged audits on billions worth of contracts. The military services lack the proper number of trained CORs to perform contract oversight in theater. Overworked contracting staffs often become victims of fraud, and often fail to properly inspect shoddy work that fails to meet the terms of a contract. Although the U.S. Congress complains about poor contract oversight and waste, it alone has the authority to enact the changes it seeks and place the proper amount of manpower and political focus against this problem.

Leadership is absolutely key in providing the proper amount of manpower and oversight to realize cost-effectiveness and success in whichever approach it decides to take for fuel operations. In order to rely more heavily on organic military forces, leadership must make wise political decisions regarding the fielding and apportionment of manpower. Regardless to what extent contractors are employed, the burden of responsible oversight will always accompany decisions to employ defense contractors. By taking lessons from the NATO fuel BOA, the United States may realize significant savings by leaving its long logistics train at home and reducing its fuel support equipment and materiel inventory. In addition to saving on financial costs, the United States can also save on the cost of its more important “national treasures.”

D. CONCLUSION: LEADERSHIP IS KEY

On November 10, 1945, the U.S. Army-Navy Petroleum Board extended their great appreciation to the U.S. Petroleum Administration for War and the entire American petroleum industry for their significant contribution to the Alliance’s victory:

by providing in full and on time the vast flood of petroleum products required by the Armed Forces during World War II.

The fulfillment of this gigantic task was without question one of the great industrial accomplishments in the history of warfare. The urgent demands of the Army and the Navy for unprecedented volumes of aviation gasolines, motor gasoline, diesel oil, fuel oils, lubricants and countless other petroleum products vital to victory were unending and often appeared impossible of fulfillment.

It is a very special tribute, therefore, that at no time did the Services lack for oil in proper quantities, in proper kinds and at the proper places.

Because of the resourcefulness, untiring and unceasing efforts, and outstanding accomplishments of the Petroleum Administration for War and the petroleum industry, not a single operation was delayed or impeded because of a lack of petroleum products. No Government agency and no branch of American industry achieved a prouder record.²³⁶

Merchant shipping moved these products across dangerous lines of communication as part of, and complementary to, the petroleum industry and governmental managing agencies. Like their counterparts serving today's Alliance in Afghanistan, the history of civilian fuel industry has proven that the contractor, in the face of hostile opposition, could meet and exceed the demands placed upon them.

Although contractors have successfully executed these logistics operations, the dependence on contractors has been regarded as highly risky. Even in WWII, the large bureaucracies and nationalization programs were not able to completely remove this dependence factor and so the Alliance had to depend heavily on industry to find, extract, refine, and transport petroleum for national and military use. Since WWII the course of this dependence has only increased. By the time ISAF operations commenced, Alliance logistics had neither the organic assets nor the command capability to physically handle theater fuel operations on the scale required in Afghanistan. ISAF nations had to depend on contractors on a scale never seen before in military operations. This dependence came as the direct result of Alliance and national policy decisions that reduced organic fuel logistics capabilities and undermined the Alliance's capacity to coordinate and command national logistics. These were conscious choices that created dependency and self-imposed risks.

Dependence on contractor support for expeditionary operations has caused even greater self-imposed risk to nations due to their mismanagement of contract logistics operations. As in WWII, the Alliance and nations increased risk through poor management practices and political machinations that created internal national conflicts

236. General U.S. Army Somervell, Brehon, Major General U.S. Army Edward M. Powers, Admiral U.S. Navy, Chairman F. J. Horne, and Rear Admiral U.S. Navy John H. Cassady to Deputy Petroleum Administrator Mr. Ralph K. Davies, Letter November 10, 1945, in *A History of the Petroleum Administration for War: 1941-1945*, ed. John W. Frey and H. Chandler Ide, (Washington: United States Government Printing Office, 1946), 288.

of interest, and undermined the Alliance's ability to manage fuel operations. By committing to worldwide operations, nations have overextended organic units' abilities to meet fuel requirements for fielded forces. If those commitments are not curtailed, then nations must place greater attention on mitigating such self-imposed risks. The Chairman of the U.S. Joint Chiefs of Staff emphasized the need for strategic planning and accountability by codifying these ideals in U.S. fuel doctrine:

The GCC, subordinate JFCs, and supporting commanders must understand that contracting is not a "fire-and-forget" system. Contracting support to military operations requires significant planning and management efforts from both the contracting staff and the requiring activity. The JFC and component commanders must ensure that the requiring activities are properly trained and actively participate in the requirements generation and validation process.²³⁷

The reality of today's risk is that, like any other military weapon system or military unit, contractors require active support and proper management from their patrons for successful expeditionary operations.

For the U.S., WWII was a four-year campaign that utilized the draft, coopted industry, and had little third party political interference affecting fuel operations. ISAF, in contrast, has been involved in OEF for more than 11 years. A near-total volunteer force and an independent industry supported ISAF with marked political interference from third parties that impacted Alliance and national fuel operations. The MTA and diplomatic border crossing struggles surrounding NATO ISAF fuel contractors revealed a new political risk never before faced. Sovereign nations, including Afghanistan, have been able to levy control over contractors and LOCs, thus increasing risks to Alliance operations. ISAF has shown that the political and diplomatic agencies of the Alliance must intercede on behalf of its contractors in order to protect the fuel supply to its fielded expeditionary forces.

The long-term nature of ISAF operations and the aspects of managing a volunteer force have created additional risks to contracted fuel operations. The Alliance and nations

237. Chairman of the Joint Chiefs of Staff of the United States, Joint Publication 4-03, *Joint Bulk Petroleum and Water Doctrine*, December 9, 2010, II-10.

have established defense personnel management systems that, while politically sustainable, have created personnel rotation rates and manpower levels that are disadvantageous to long-term military operations. At all levels of operations there are sufficient mechanisms in place for oversight and management; however, these programs have suffered from both frequent personnel rotations rates and lack of adequate manpower. If nations and the Alliance are unable to maintain personnel in positions for longer terms and/or adequately man oversight and management positions, then such practices will only further exacerbate risk. Given the constraints of personnel resources, a concerted effort must then be placed on mitigating these risks by developing stable, long-term management of contract operations. With proper manning levels, agencies like DLA Energy, NSPA, and DCMA could develop stable, long-term management. In order to be effective, however, they must also be able to extend their authority farther into the operational theaters of war, where high personnel rotation rates have weakened the management and oversight of contractors.

For the foreseeable future, nations will be dependent on contractors and the petroleum industry to provide fuel to expeditionary forces. Fortunately, despite the shortcomings of nations and the Alliance, contractors and industry have proven their ability to supply fuel to expeditionary forces for more than 70 years. The relationship between contractors and defense establishments can remain advantageous to both parties if the requirement holders can correct poor management and oversight practices. In their final report to the U.S. Congress, the Commission on Wartime Contracting in Iraq and Afghanistan wrote:

Failure by Congress and the Executive Branch to heed a decade's lessons on contingency contracting from Iraq and Afghanistan will not avert new contingencies. It will only ensure that additional billions of dollars of waste will occur and that U.S. objectives and standing in the world will suffer. Worse still, lives will be lost because of waste and mismanagement. The nation's security demands nothing less than sweeping reform.²³⁸

238. The Commission on Wartime Contracting in Iraq and Afghanistan, "Transforming Wartime Contracting: Controlling Costs, Reducing Risks," Arlington: Commission on Wartime Contracting, August 2011, 172.

Within the broader logistics community, including fuels, contracting and acquisition, etc., sweeping reform is not the answer. Before abandoning the current system and committing to reform, leadership must first enforce current regulations and contracting guidelines. Sweeping reform of agencies will not guarantee sufficient manning, nor will it ensure that the technical abilities of personnel will remain commensurate with the tasks required to manage and oversee contractors. Instead, responsible leadership and personal accountability is critical to ensuring that contracting programs have the proper levels of resources and oversight to be successful. U.S. Army Major General (ret.) Aubrey S. Newman wrote that “[t]here is no substitute for troop duty in a company as the foundation for command and leadership at all levels—which includes a basic understanding of how to establish supply discipline.”²³⁹ Military commanders and their civilian counter parts who manage logistics organizations at all levels have the primary responsibilities to exercise their duties correctly. Before executing sweeping changes, leaders must hold managers accountable to existing regulations and ensure that these managers properly train, equip, and man the logistics organizations already executing and overseeing support operations.

239. Major General U.S. Army (ret.) Aubrey S. Newman, *Follow Me I: The Human Element in Leadership*, (Novato: Presidio Press, 1997), 191.

APPENDIX. U.S. AND NATO FUEL COST DATA

The data provided is a capture from an Excel sheet used to calculate cost data presented in this thesis. Table 6 through Table 8 represent a continuous spread sheet that has been broken into larger images for readability. The first row of data provides the calculations used to convert DLA Energy and other U.S. figures into liter values. The gallon data has also been provided for reference, Table 8. U.S. FBCF data was derived from the U.S. PPL plus the cost per liter to deliver fuel to the FOB level. FBCF Data for “U.S. FBCF 1,” “U.S. FBCF 3,” and “U.S. FBCF 4” was derived from Figure 23 with the substitution of the actual monthly cost of DLA Energy fuel. FBCF Data for “U.S. FBCF 2” was derived from Table 11 with the substitution of the actual monthly cost of DLA Energy fuel. As there is no official U.S. figure for the FBCF, the examples are representative of a conservative spectrum of FBCF estimates. Table 9 and Table 10 are from NATO data that was provided directly from JFC HQ Brunssum P&C staff records.

	"DLA- E:JP8/TS1"+(6.9/3.78 54)	"DLA- E:JP8/TS1"+(15.74/3. 7854)	"DLA- E:JP8/TS1"+(23.15/3. 7854)	"DLA- E:JP8/TS1"+(42.37/3. 7854)	"JP8/TS1"/3.7854	"DL2"/3.7854
US DATA	US FBCF 1	US FBCF 2	US FBCF 3	US FBCF 4	DLA-E: JP8/TS1	DLA-E: DL2
Month	PPL	PPL	PPL	PPL	PPL	PPL
Dec-09	2.5572	4.8925	6.8500	11.9274	0.7344	0.6578
Jan-10	2.5678	4.9030	6.8606	11.9380	0.7450	0.6684
Feb-10	2.5678	4.9030	6.8606	11.9380	0.7450	0.6684
Mar-10	2.5678	4.9030	6.8606	11.9380	0.7450	0.6684
Apr-10	2.5678	4.9030	6.8606	11.9380	0.7450	0.6684
May-10	2.5678	4.9030	6.8606	11.9380	0.7450	0.6684
Jun-10	2.5678	4.9030	6.8606	11.9380	0.7450	0.6684
Jul-10	2.4410	4.7762	6.7338	11.8112	0.6182	0.5548
Aug-10	2.4410	4.7762	6.7338	11.8112	0.6182	0.5548
Sep-10	2.4410	4.7762	6.7338	11.8112	0.6182	0.5548
Oct-10	2.6232	4.9585	6.9160	11.9934	0.8004	0.7186
Nov-10	2.6232	4.9585	6.9160	11.9934	0.8004	0.7186
Dec-10	2.6232	4.9585	6.9160	11.9934	0.8004	0.7186
Jan-11	2.6232	4.9585	6.9160	11.9934	0.8004	0.7186
Feb-11	2.6232	4.9585	6.9160	11.9934	0.8004	0.7186
Mar-11	2.6232	4.9585	6.9160	11.9934	0.8004	0.7186
Apr-11	2.6232	4.9585	6.9160	11.9934	0.8004	0.7186
May-11	2.6232	4.9585	6.9160	11.9934	0.8004	0.7186
Jun-11	2.8663	5.2016	7.1591	12.2365	1.0435	0.9378
Jul-11	2.8663	5.2016	7.1591	12.2365	1.0435	0.9378
Aug-11	2.8663	5.2016	7.1591	12.2365	1.0435	0.9378
Sep-11	2.8663	5.2016	7.1591	12.2365	1.0435	0.9378
Oct-11	2.8663	5.2016	7.1591	12.2365	1.0435	0.9378
Nov-11	2.8663	5.2016	7.1591	12.2365	1.0435	0.9378
Dec-11	2.8663	5.2016	7.1591	12.2365	1.0435	0.9378
Jan-12	2.8319	5.1672	7.1247	12.2021	1.0091	0.9061
Feb-12	2.8319	5.1672	7.1247	12.2021	1.0091	0.9061
Mar-12	2.8319	5.1672	7.1247	12.2021	1.0091	0.9061
Apr-12	2.8319	5.1672	7.1247	12.2021	1.0091	0.9061
May-12	2.8319	5.1672	7.1247	12.2021	1.0091	0.9061
Jun-12	2.7738	5.1091	7.0666	12.1440	0.9510	0.8533
Jul-12	2.4330	4.7683	6.7258	11.8032	0.6102	0.5468

Table 6. U.S. Fuel Cost Data in U.S. Dollars, Part 1.

	"Diesel (Afghan only)"/3.7854	"DLA-E: F-34 (NATO BOA) NSN 9130-01-572-4320"/3.7854	"DLA-E: Liquid Fuel (NATO BOA) NSN 9130-01-578-0515"/3.7854	"DLA-E: 100LL NSN 9130-01-531-4426"/3.7854	"DLA-E: 100LL NSN 9130-00-179-1122"/3.7854	"DLA-E: RON92 (Afghan only) NSN 9130-01-526-4844"/3.7854
US DATA	DLA-E: Diesel (Afghan only)	DLA-E: F-34 (NATO BOA) NSN 9130-01-572-4320	DLA-E: Liquid Fuel (NATO BOA) NSN 9130-01-578-0515	DLA-E: 100LL NSN 9130-01-531-4426	DLA-E: 100LL NSN 9130-00-179-1122	DLA-E: RON92 (Afghan only) NSN 9130-01-526-4844
Month	PPL	PPL	PPL	PPL	PPL	PPL
Dec-09	0.7793	1.7171	1.4530	3.2863	0.8374	0.8506
Jan-10	0.7899	1.7171	1.4741	3.3339	0.8506	0.8638
Feb-10	0.7899	1.7171	1.4741	3.3339	0.8506	0.8638
Mar-10	0.7899	1.7171	1.4741	3.3339	0.8506	0.8638
Apr-10	0.7899	1.7171	1.4741	3.3339	0.8506	0.8638
May-10	0.7899	1.7171	1.4741	3.3339	0.8506	0.8638
Jun-10	0.7899	1.7171	1.4741	3.3339	0.8506	0.8638
Jul-10	0.6551	1.7171	1.5850	2.7659	0.7053	0.7159
Aug-10	0.6551	1.7171	1.5850	2.7659	0.7053	0.7159
Sep-10	0.6551	1.7171	1.5850	2.7659	0.7053	0.7159
Oct-10	0.8480	1.7171	2.0526	3.5822	0.9140	0.9272
Nov-10	0.8480	1.7171	2.0526	3.5822	0.9140	0.9272
Dec-10	0.8480	1.7171	2.0526	3.5822	0.9140	0.9272
Jan-11	0.8480	1.7171	2.0526	3.5822	0.9140	0.9272
Feb-11	0.8480	1.7171	2.0526	3.5822	0.9140	0.9272
Mar-11	0.8480	1.7171	2.0526	3.5822	0.9140	0.9272
Apr-11	0.8480	1.7171	2.0526	3.5822	0.9140	0.9272
May-11	0.8480	1.7171	2.0526	3.5822	0.9140	0.9272
Jun-11	1.1042	1.9813	2.0526	4.6706	1.1914	1.2099
Jul-11	1.1042	1.9813	2.0526	4.6706	1.1914	1.2099
Aug-11	1.1042	1.9813	2.0526	4.6706	1.1914	1.2099
Sep-11	1.1042	1.9813	2.0526	4.6706	1.1914	1.2099
Oct-11	1.1042	1.9813	2.0526	4.6706	1.1914	1.2099
Nov-11	1.1042	1.9813	2.0526	4.6706	1.1914	1.2099
Dec-11	1.1042	1.9813	2.0526	4.6706	1.1914	1.2099
Jan-12	1.0673	1.9813	2.0526	4.5174	1.1518	1.1703
Feb-12	1.0673	1.9813	2.0526	4.5174	1.1518	1.1703
Mar-12	1.0673	1.9813	2.0526	4.5174	1.1518	1.1703
Apr-12	1.0673	1.9813	2.0526	4.5174	1.1518	1.1703
May-12	1.0673	1.9813	2.0526	4.5174	1.1518	1.1703
Jun-12	1.0065	1.9813	2.0526	4.2585	1.0858	1.1016
Jul-12	0.6446	1.9813	2.0526	2.7315	0.6974	0.7080

Table 7. U.S. Fuel Cost Data in U.S. Dollars, Part 2.

US DATA	JP8/TS1	DL2	Diesel (Afghan only)	F-34 (NATO BOA) 9130- 01-572- 4320	Liquid Fuel (NATO BOA) 9130-01-578- 0515	100LL 9130- 01-531- 4426	100LL 9130- 00-179-1122	100LL Drum 9130-00-221- 0677	RON92 (Afghan only) 9130-01-526- 4844
Month	PPGallon	PPGallon	PPGallon	PPGallon	PPGallon	PPGallon	PPGallon	PPGallon	PPGallon
Dec-09	2.78	2.49	2.95	6.5	5.5	12.44	3.17	212.34	3.22
Jan-10	2.82	2.53	2.99	6.5	5.58	12.62	3.22	215.04	3.27
Feb-10	2.82	2.53	2.99	6.5	5.58	12.62	3.22	215.04	3.27
Mar-10	2.82	2.53	2.99	6.5	5.58	12.62	3.22	215.04	3.27
Apr-10	2.82	2.53	2.99	6.5	5.58	12.62	3.22	215.04	3.27
May-10	2.82	2.53	2.99	6.5	5.58	12.62	3.22	215.04	3.27
Jun-10	2.82	2.53	2.99	6.5	5.58	12.62	3.22	215.04	3.27
Jul-10	2.34	2.1	2.48	6.5	6	10.47	2.67	178.44	2.71
Aug-10	2.34	2.1	2.48	6.5	6	10.47	2.67	178.44	2.71
Sep-10	2.34	2.1	2.48	6.5	6	10.47	2.67	178.44	2.71
Oct-10	3.03	2.72	3.21	6.5	7.77	13.56	3.46	228	3.51
Nov-10	3.03	2.72	3.21	6.5	7.77	13.56	3.46	228	3.51
Dec-10	3.03	2.72	3.21	6.5	7.77	13.56	3.46	228	3.51
Jan-11	3.03	2.72	3.21	6.5	7.77	13.56	3.46	228	3.51
Feb-11	3.03	2.72	3.21	6.5	7.77	13.56	3.46	228	3.51
Mar-11	3.03	2.72	3.21	6.5	7.77	13.56	3.46	228	3.51
Apr-11	3.03	2.72	3.21	6.5	7.77	13.56	3.46	228	3.51
May-11	3.03	2.72	3.21	6.5	7.77	13.56	3.46	228	3.51
Jun-11	3.95	3.55	4.18	7.5	7.77	17.68	4.51	297.23	4.58
Jul-11	3.95	3.55	4.18	7.5	7.77	17.68	4.51	297.23	4.58
Aug-11	3.95	3.55	4.18	7.5	7.77	17.68	4.51	297.23	4.58
Sep-11	3.95	3.55	4.18	7.5	7.77	17.68	4.51	297.23	4.58
Oct-11	3.95	3.55	4.18	7.5	7.77	17.68	4.51	297.23	4.58
Nov-11	3.95	3.55	4.18	7.5	7.77	17.68	4.51	297.23	4.58
Dec-11	3.95	3.55	4.18	7.5	7.77	17.68	4.51	297.23	4.58
Jan-12	3.82	3.43	4.04	7.5	7.77	17.1	4.36	287.45	4.43
Feb-12	3.82	3.43	4.04	7.5	7.77	17.1	4.36	287.45	4.43
Mar-12	3.82	3.43	4.04	7.5	7.77	17.1	4.36	287.45	4.43
Apr-12	3.82	3.43	4.04	7.5	7.77	17.1	4.36	287.45	4.43
May-12	3.82	3.43	4.04	7.5	7.77	17.1	4.36	287.45	4.43
Jun-12	3.6	3.23	3.81	7.5	7.77	16.12	4.11	270.9	4.17
Jul-12	2.31	2.07	2.44	7.5	7.77	10.34	2.64	173.83	2.68

Table 8. U.S. Fuel Cost Data in U.S. Dollars, Part 3.

NATO	F-34	F-54	F-34	F-54
Month	Supreme SPPL	Supreme SPPL	NCS SPPL	NCS SPPL
Dec-09	0.7561	0.8293	0.6069	1.1349
Jan-10	0.7330	0.8829	0.6058	1.1248
Feb-10	0.8025	0.8996	0.6196	1.0582
Mar-10	0.7556	0.8811	0.6334	1.0495
Apr-10	0.7832	0.7290	0.6603	1.0143
May-10	0.7619	0.7854	0.7170	1.0296
Jun-10	0.8459	0.7404	0.7502	1.0243
Jul-10	0.8410	0.6745	0.7876	1.0029
Aug-10	0.8303	0.8009	0.7999	1.0270
Sep-10	0.8297	0.6803	0.7949	1.1023
Oct-10	0.8837	0.7579	0.6928	1.0072
Nov-10	0.9086	0.8326	0.7459	1.0093
Dec-10	0.9312	0.8982	0.7524	0.9793
Jan-11	0.9619	0.9048	0.8614	0.9939
Feb-11	0.9491	0.9028	0.8380	1.0055
Mar-11	0.9650	0.9362	0.8783	1.1317
Apr-11	1.0321	1.0354	0.8599	1.1418
May-11	1.1287	1.1044	0.9348	1.2105
Jun-11	1.1253	1.1010	0.9389	1.1285
Jul-11	1.1773	1.1027	0.9836	1.2403
Aug-11	1.1903	1.0805	1.0411	1.1599
Sep-11	1.1892	1.1052	0.9591	1.2180
Oct-11	1.2082	1.1034	1.0957	1.1299
Nov-11	1.2289	1.0595	1.1587	1.1032
Dec-11	1.1988	1.1120	1.3901	1.2196
Jan-12	1.2180	1.0956	1.4847	1.3744
Feb-12	1.2416	1.1816	1.5185	1.3813
Mar-12	1.2532	1.2446	1.4033	1.3762
Apr-12	1.2392	1.1794	1.4857	1.3761
May-12	1.2656	1.1783	1.4692	1.4730
Jun-12	1.2939	1.1808	1.4626	1.4901
Jul-12	1.3064	1.2011	1.4248	1.4901

Table 9. NATO Fuel BOA Monthly Equivalent “Standard Price” Per Liter (SPPL) in U.S. Dollars.²⁴⁰

240. From: Major Royal Dutch Marechaussee Wouter van Koeveringe, (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) “Charts overall pricing Supreme and NCS 18-07-2012,” July 18, 2012.

NATO PPL		F-34	F-54	F-34	F-54
Month	Supreme	Supreme	NCS	NCS	
Dec-09	1.6320	1.5881	1.1470	1.4181	
Jan-10	1.6195	1.6448	1.1285	1.4078	
Feb-10	1.7263	1.6484	1.1555	1.3399	
Mar-10	1.654	1.6402	1.1443	1.3229	
Apr-10	1.6905	1.4578	1.1713	1.2881	
May-10	1.6873	1.5863	1.2078	1.3007	
Jun-10	1.7642	1.4622	1.2203	1.2912	
Jul-10	1.7277	1.3318	1.2389	1.2972	
Aug-10	1.6759	1.3387	1.2459	1.378	
Sep-10	1.6324	1.0856	1.2479	1.4606	
Oct-10	1.6882	1.1686	1.2425	1.5105	
Nov-10	1.7946	1.6587	1.3378	1.566	
Dec-10	1.7951	1.7019	1.35	1.5654	
Jan-11	1.8647	1.7063	1.458	1.5971	
Feb-11	1.7889	1.7495	1.4689	1.6689	
Mar-11	1.8162	1.7748	1.5522	1.7325	
Apr-11	1.917	1.9168	1.507	1.7466	
May-11	2.0245	2.0206	1.6453	1.8348	
Jun-11	1.8971	1.9006	1.6902	1.896	
Jul-11	2.0114	1.8914	1.7794	1.9238	
Aug-11	2.0035	1.8462	1.7979	1.8461	
Sep-11	1.9942	1.9083	1.655	1.6502	
Oct-11	2.0525	1.8852	1.6625	1.7156	
Nov-11	2.0851	1.9122	1.6847	1.6293	
Dec-11	1.9981	1.9187	1.7297	1.7933	
Jan-12	2.1958	1.9856	1.9097	1.9744	
Feb-12	2.2108	2.21	1.9982	2.0074	
Mar-12	2.4187	2.4401	2.0715	2.0806	
Apr-12	2.425	2.3497	2.0919	2.0939	
May-12	2.5249	2.4218	2.2895	2.3137	
Jun-12	2.5622	2.4403	2.2892	2.3316	
Jul-12	2.5605	2.4557	2.3308	2.353	

Table 10. NATO Fuel BOA Monthly Price Per Liter in U.S. Dollars.²⁴¹

241. From: Major Royal Dutch Marechaussee Wouter van Koeveringe, (JFC HQ Brunssum Purchasing and Contracting Officer Executing the BOA) "Charts overall pricing Supreme and NCS 18-07-2012," July 18, 2012.

Cost Components	Annual Cost Base Case	% of FBCF	\$ Per Gallon
Force Protection (Air)	\$ 5,163,788.99	15.5%	\$ 2.19
Force Protection (Ground)	\$ 2,823,413.83	8.5%	\$ 1.20
Transport	\$ 11,189,210.80	33.6%	\$ 4.75
Resupply	\$ 10,564,739.00	31.7%	\$ 4.48
Initial Deployment	\$ 579,656.31	1.7%	\$ 0.25
Relocation	\$ 44,815.50	0.1%	\$ 0.02
Return		0.0%	\$ -
Fuel Support Military Personnel in SBCT	\$ 5,737,231.63	17.2%	\$ 2.43
Fuel Support Equipment in SBCT	\$ 432,488.07	1.3%	\$ 0.18
Sustainment Brigade/TSC	\$ 571,155.90	1.7%	\$ 0.24
Fuel Commodity	\$ 7,402,829.15	22.2%	\$ 3.14

Table 11. Example Base Case FBCF in Theater (in Iraq) for a Stryker Brigade Combat Team (SBCT) in Southwest Asia.²⁴²

242. From: Steve Siegel, Steve Bell, Scott Dicke, and Peter Arbuckle, "Sustain the Mission Project: Energy and Water Costing Methodology and Decision Support Tool," Army Environmental Policy Institute Final Technical Report, National Defense Center for Energy and Environment, July 2008, 8. The authors calculated that the FBCF was \$14.13 per gallon; however the figures they provided did not equal the value of \$14.13. Using their figures the FBCF should be \$15.74 + \$3.14 (fuel cost) = \$18.88 per gallon of fuel. The correct value of \$15.74 was used to develop data for Column "U.S. FBCF2."

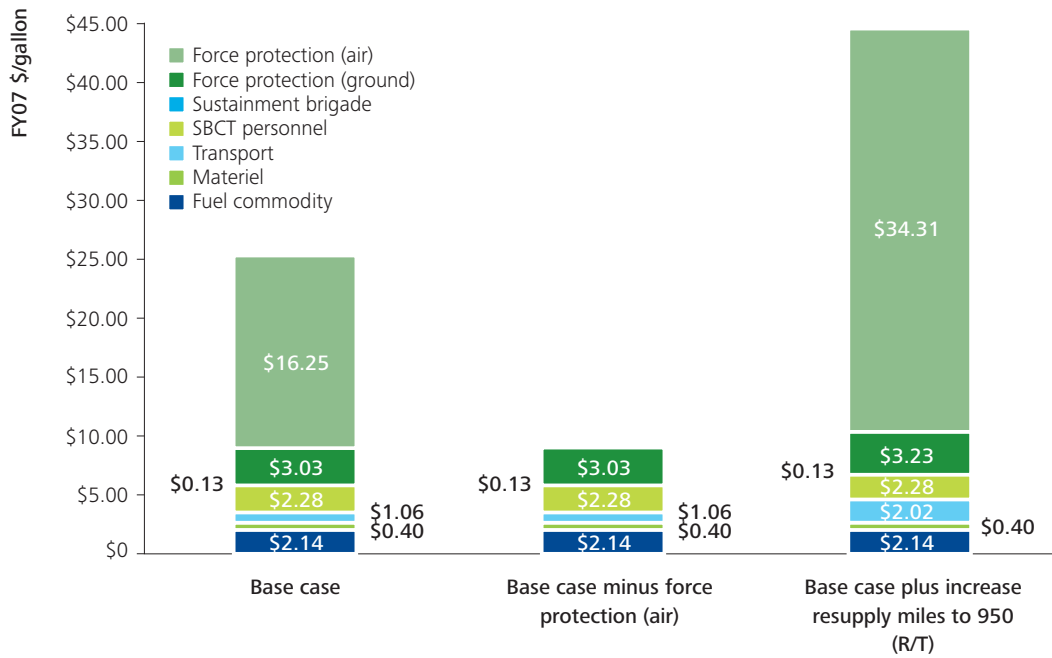


Figure 23. U.S. FBCF Data.²⁴³

243. From: Charles F. Wald, and Tom Captain, "Energy Security American's Best Defense: A Study of Increasing Dependence on Fossil Fuels in Wartime, and Its Contribution to Ever Higher Casualty Rates," Deloitte Development LCC, 2009, 19.

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