

*CONTRIBUTION OF
LOGISTICS TO SUSTAIN
FORCES IN GULF WAR*



LONG LOGISTICS MANAGEMENT COURSE
NO.2
SYNDICATE – “A”
NAVAL AND MARITIME ACADEMY
TRINCOMALEE



CAMPAIGN PRESENTATION

SYNDICATE A



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INTRODUCTION

1. WAR IN THE GULF (1990 - 1992): (Logistics; From Bombs to Burgers), Gulf War Involves Biggest Supply Effort, Ever experienced in any battle field.
2. The Gulf War, or the First Gulf War, is a well known war that occurred in the early 1990's in response to Iraq invading Kuwait. While many know of the war itself and the outcome of the war, it seems the actual causes of the Gulf War are lost on many. The causes of the Gulf War can actually be tracked back quite a few years, even a decade before the war started and complex to understand. Below are the causes of the Gulf War and the impacts it had on the countries involved.

CAUSES OF THE GULF WAR

3. The causes of the Gulf War actually started when Iraq was at war with Iran. During this war Iran was not only attacking Iraq but also attacking oil tankers from Kuwait at sea too. To support the ending of the war Kuwait financially aided Iraq by lending the country 14 Billion US Dollars.
4. Iraq tried to convince Kuwait to dissolve the debt as Iraq had done Kuwait a favour by being at war with Iran, Kuwait declined and this caused a rift between the two countries. For a year they tried to resolve the financial situation but without benefit.
5. The next step was for Iraq to ask all OPEC members to reduce oil production so the price of crude oil would increase, this would in turn increase revenues for Iraq allowing the country to pay back its debts. While other countries may have agreed Kuwait did the opposite and asked to increase its quota by fifty percent, much to the dissatisfaction of Iraq.
6. Next Iraq started alleging that Kuwait was drilling in a diagonal manner into Iraq Rumaila oil field territory over the border; this would mean that Kuwait was stealing Iraq's oil rather than taking their own.
7. Saddam Hussein decided that he had no other option but military might so he stationed 100,000 troops on the border and in early August invaded Kuwait. As the Iraqi forces invaded and took over Kuwait they set fire to hundreds of Kuwaiti oil fields on the way.
8. After invading Kuwait the UN declared Iraq's actions violating UN charter article 39 and economic sanctions were put in place. By November Iraq was still in control of Kuwait so the UN drew up Resolution 678 in which Iraq had until midnight on January 15th 1991 to leave otherwise military intervention could be used. On 16th January Iraqi forces were still in Kuwait and a coalition force made up of 34 countries headed by America took up the challenge and started Operation Desert Storm which in turn ended up being the beginning of the Gulf War.

9. There were three phases in the Gulf War: deployment (Operation Desert Shield), combat (Operation Desert Storm) and redeployment.¹³⁵ (Operation Desert Farewell). Logistics played a significant role throughout the campaign. Within the short duration of the war, several significant logistics operations were conducted with enviable success despite the complexity, magnitude and multi-dimensional nature of the logistical support requirements.

OPERATION DESERT SHIELD

10. In the early build-up phase, the coalition's challenge was to quickly rush enough troops and equipment into the theatre to deter and resist the anticipated Iraqi attack against Saudi Arabia. The logistical system was straining to quickly receive and settle the forces pouring in at an hourly rate. The logisticians then had to cope with the daunting tasks of landing and processing 38,000 troops and 163, 581 tons of equipment within the first 30 days.

11. Besides the massive amount of supplies and military hardware, the logistics personnel also had to deal with basic issues such as sanitation, transport and accommodation, etc. A number of these requirements were resolved by local outsourcing, eg. Bedouin tents were bought and put up by contracted locals to house the troops; and refrigerated trucks were hired to provide cold drinks to the troops.

12. Despite the short timeframe given for preparation, the resourceful logistics team was up to the given tasks. The effective logistics support demonstrated in Operation Desert Shield allowed the quick deployment of the troops in the initial phase of the operation. It also provided the troops a positive start before the commencement of the offensive operation.

OPERATION DESERT STORM

13. It began at 0230 hours on Jan 17, 1991 when the US planes bombed targets in Kuwait and Iraq. A total of 2,500 tons of bombs were dropped within the first 24 hours. The month of intensive bombing had badly crippled the Iraqi command and control systems. Coalition forces took full advantage of this and were ready to gear up for the now famous "end run" around the western flank of the Iraqi border defenses.

14. To the logisticians, this maneuver posed another huge challenge. To support such a maneuver, two Army Corps worth of personnel and equipment had to be transported westward and northward to their respective jumping off points for the assault. Nearly 4,000 heavy vehicles were used. The amount of co-ordination, transport means and hence the movement control required within the theatre was enormous. Just before the ground assault began, peak traffic at a key checkpoint of

the supply routes approached 18 vehicles per minute, seven days a week, 24 hours a day. This volume was sustained for almost six weeks. This maneuver would not have been possible without the logistics capabilities of the US Army.

OPERATION DESERT FAREWELL

15. It was recognised that the logistical requirements to support the initial build-up phase and the subsequent air and land offensive operations were difficult tasks to achieve. However, the sheer scope of overall redeployment task at the end of the war was beyond easy comprehension. To illustrate, the King Khalid Military City (KKMC) main depot was probably the largest collection of military equipment ever assembled in one place. A Blackhawk helicopter flying around the perimeter of the depot would take over an hour. While the fighting troops were heading home, the logisticians, who were among the first to arrive at the start of the war, were again entrusted with a less glamorous but important "clean up job". Despite the massive amount of supplies and hardware to be shipped back, the logisticians who remained behind completed the re-deployment almost six months ahead of time.

16. Throughout the war, the Commanding General, Norman Schwarzkopf, had accorded great importance to logistics. MG William G Pagonis was appointed as the Deputy Commanding General for logistics and subsequently given a promotion to a three-star general during the war. This promotion symbolised the importance of a single and authoritative logistical point of contact in the Gulf War. Under the able leadership of LG Pagonis, the efficient and effective logistical support system set up in the Gulf War, from deployment phase to the pull-out phase, enabled the US-led coalition forces to achieve a swift and decisive victory over the Iraqi. The achievement of logistics in the Gulf War in General Schwarzkopf's words, 'an absolutely gigantic accomplishment', highlights the vital role played by logistics during the Gulf War. These complex logistics operations successfully executed during the War will remind many of the mighty prowess of effective logistics as well as the penalties for the lack of it.

PARTIES INVOLVED IN GULF WAR

17. The Allied coalition was made up of 39 countries: Afghanistan, Argentina, Australia, Bahrain, Bangladesh, Belgium, Canada, Czechoslovakia, Denmark, Egypt, France, Germany, Greece, Honduras, Hungary, Italy, Kuwait, Morocco, the Netherlands, New Zealand, Niger, Norway, Oman, Pakistan, Poland, Portugal, Qatar, Saudi Arabia, Senegal, Sierra Leone, Singapore, South

Korea, Spain, Sweden, Syria, Turkey, the United Kingdom, the United Arab Emirates and the United States.

- a The coalition consisted of 670,000 troops from 28 countries. About 425,000 of the troops were from the United States.
- b The U.S. Department of Defense has estimated the cost of the Gulf War at \$61 billion.
- c Kuwait, Saudi Arabia and other Gulf states covered \$36 billion.
- d Germany and Japan covered \$16 billion.
- e More than 100,000 Iraqi soldiers were killed.
- f The United States had 383 fatalities.

AIM

18. To derive the logistics strategies used in gulf war and identify lessons learnt to impart knowledge for future logisticians.

LOGISTICS CHALLENGES IN WAR

"There can be no revolution in military affairs without first having revolution in military logistics."

General Dennis J Reimer, Chief of Staff, US Army

19. To the military, logistics is the key tenet. The challenge for logistics would be to be able to transit from peacetime to war smoothly and efficiently, overcoming all physical and time limitations, to provide logistics support of the highest quality to the forcers. Seamless logistics systems, materiel storage and distribution, agile infrastructure, total asset visibility and optimal logistics to force ratio - are all hallmarks of logisticians of the future. It will re-shape how the military projects and sustains, ensuring that logistics will continue to be a strength multiplier.

20. Military logistics is a discipline of planning and carrying out the movement and maintenance of military forces. In its most comprehensive sense, it is those aspects of military operations that deal with:

- Design, development, acquisition, storage, distribution, maintenance, evacuation, and disposition of material.
- Transport of personnel.
- Acquisition or construction, maintenance, operation, and disposition of facilities.
- Acquisition or furnishing of services.
- Medical and health service support.

20. In major military conflicts, logistics matters are often crucial in deciding the overall outcome of wars. Logistics in the Persian Gulf War as it applies to all military operations and in particular to air operations. Simply put, how did the United States equip its forces for Desert Shield and Desert Storm? Logistics also includes functions for maintaining an air base and support services. The science of planning and carrying out the movement and maintenance of forces.

21. In its most comprehensive sense, those aspects of military operations which deal with:

a. design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel;

b. movement, evacuation, and hospitalization of personnel;

c. acquisition, or construction, maintenance, operation, and disposition of facilities; and d. acquisition or furnishing of services.

22. The Gulf War encompassed all of these aspects of logistics, and did so on a grand scale. One of the main reasons for success in this conflict was the ability of the U.S. military to respond logistically.

23. The state of logistics prior to the conflict, the characteristics of planning, the efforts to put combat and support elements in place, the support of air operations during combat; and in particular, how planners imagine the role of logistics in supporting air

24. Lieutenant General William Gus Pagonis was the director of logistics during the Gulf War and is widely recognized for his logistical achievements particularly during Desert Storm.

25. The challenges facing logisticians during Operations Desert Shield and Desert Storm seemed almost impossible and, in some measure, driven the ad hoc approach LTG Pagonis adopted in tackling them. Logisticians had to find a way to deploy over 350,000 combat troops into the theater along with all their equipment and supplies.

26. They had to sustain those forces in the theater for as long as the war lasted. That meant delivering food and water to personnel dispersed over hundreds of miles of desert, plus getting fuel, lubricants, ammunition, and spare parts where they were needed, when they were needed, to arm and maintain over 2,000 M1A1 tanks, thousands of armored personnel carriers, motorized artillery, trucks, helicopters, and aircraft. One source estimated a demand for 15 million gallons of fuel a day once the ground war began, all of which would have to be trucked to the battlefield. The final challenge facing logisticians was how to redeploy those forces and supplies once the war ended.

THE FIRST HURDLE: RECEPTION OF FORCES

27. In August 1990 U.S. President George H. W. Bush ordered the US military to deploy to Saudi Arabia, the Army alerted the 7th Transportation Group, Fort Eustis, Virginia, and ordered a host nation coordination cell under Pagonis to travel to Saudi Arabia immediately. The 7th Transportation Group's first responsibility was to prepare the Saudi port facilities to receive the XVIII Airborne Corps and its equipment. Fortunately for US forces, in an interesting twist of history, Saudi Arabia's ports and airfields were among the best in the world then. This base, capable of supporting a force of more than 75,000 troops played an extremely important role as a staging base for the coalition forces' offensive thrust into Iraq during the ground war.

28. On 7 August 1990, LTG Pagonis and five members of his hand-picked logistics team boarded an aircraft for Saudi Arabia. While enroute they worked furiously to sketch out a plan of action. As soon as they arrived, they established a Logistics Operations Center (LOC) at the Ministry of Defense and Aviation (MODA) Building in Riyadh. On August, four days before the 7th Transportation Group arrived in theater, the first elements of the 82nd Airborne Division and XVIII Airborne Corps began streaming into Dhahran. From that moment on, logisticians were move quickly to stay one step ahead of the torrent of people and supplies that began pouring into the country.

29. The initial mission of Pagonis's log cell was to arrange host nation support and to oversee reception of the XVIII Corps until the 1st COSCOM and its subordinate Division Support Commands (DISCOMs) arrived.

Pagonis and his ad hoc organization had to fill the gap until the subordinate Division Support Commands (DISCOM's) equipment arrived 45 days later. In addition, by doctrine, logistical support for sister services becomes the Army's responsibility by a set period. Consequently, on 3 October, Pagonis and his SUPCOM became responsible for providing fuel distribution to the Air Force and on 23 October, rations support.

30. The rush to get combat troops into the theater, and the usual fog and friction of operations, necessitated immediate diversion from published doctrine that offered virtually no guidance for the situation. LTG Pagonis sketched out a logistics concept of operation for the Gulf War within hours of finding out he would deploy to Saudi Arabia.

31. He chose twenty-two officers and enlisted men to form his logistics cell, including individuals with expertise in aerial and sea ports of debarkation (APOD and SPOD), maintenance, food service, contracting, facilities, engineering, resource management, and transportation.

32. One of the hallmarks of LTG Pagonis's logistics operation was his delegation of tremendous authority and responsibility to his logistics team members. All responded with unique contributions based upon their particular areas of expertise. Perhaps the most well known innovator on the logistics team was Chief Warrant Officer Wesley Wolf. Wolf was responsible for contracting for the tons of fresh produce and other foodstuffs that the troops enjoyed. Before the war ended, Wolf and his "Wolf Mobiles" were serving "Wolf burgers" and other fresh food to over 300,000 troops daily.

33. Even LTG Pagonis's astute leadership could not overcome the very real problems that occurred when thousands of combat troops poured into the theater while their logisticians and support personnel remained behind to make room for them on aircraft and ships.

34. In the first few days of Desert Shield, three officers of the US Military Training Mission were the only US personnel on hand to receive the first elements of the 82nd Airborne Division. Within three days, they received more than 4,000 troops and moved them to a vacated Saudi Air Defense Artillery site using borrowed buses from the Saudi Air Force. In the first 15 days, more than 40,000 troops processed through the APODs, and every day, hundreds more arrived. In fact, the troop flow continued unabated until the 82nd Airborne Division,

35. These initial forces comprised more than 100,000 troops and posed constant challenges for logisticians. By 4 November 1990, the XVIII Airborne Corps had completed its deployment to Saudi Arabia. In 93 days Pagonis and his team had overseen the reception and bed down of more than 112,000 troops and the offloading of more than 106 ships carrying 4,123 tracked vehicles, 31,547 wheeled vehicles, and 703 aircraft. The XVIII Corps deployment had barely ended when President Bush ordered the VII Corps to deploy from Germany to Saudi Arabia. Fortunately, by that time, the 22d SUPCOM (provisional) had grown to 11,849 logisticians including 2,973 reservists from fifty-nine units and was better prepared to handle the influx of troops.

THE SECOND HURDLE: SUSTAINMENT

36. Interestingly, General Pagonis's immediate concern during the reception phase of operations was not how to sustain forces with food and shelter, but rather how to provide them with adequate sanitation. He knew that poor sanitation in past wars had cost American forces thousands of incapacitated combat soldiers due to dysentery and related illnesses. With Iraqi forces poised to attack Saudi Arabia at a moments notice, the US could ill-afford to lose any soldiers to disease. Pagonis and his logistics team responded quickly with characteristic creativity. Within days of arriving in-theater, Captain Tony Gardener designed a wooden latrine, shower, and wash basin and negotiated a deal with a Saudi company to produce 100 of the units daily at a cost of \$360 each. Within a month, 3,000 of the latrines had been built and distributed among the deployed units. By October, Saudi contractors were producing 600 latrines, 300 showers, and 200 sinks daily. Pagonis later cited the fact that no US troops succumbed to disease due to poor sanitation as one of his proudest accomplishments of the war.

37. There is no question that host nation support was absolutely essential to successful US operations in the Gulf War-especially when it came to sustaining forces in theater. Pagonis and his staff worked closely with Prince Mohammed bin Fahd, governor of the Saudi Eastern Province, to negotiate scores of host nation agreements. The first major progress concerning host nation support occurred on 11 August when the Saudis turned over the port facilities at Ad Dammam to US forces. Pagonis immediately moved his Logistics Operations Center to nearby Dhahran.

38. Contracting support was equally important to logistics operations. On 23 August 1990, Pagonis received authority to lease up to \$2 million worth of real estate. In addition, contracting officers leased hundreds of trucks, buses, tents, Material handling equipment, and tons of food, water, and other supplies.

A NEW-STYLE LOGBASE: THE SECOND DOCTRINAL DEVIATION

39. A major factor in General Pagonis's success in sustaining more than 350,000 combat troops in theater was his willingness to deviate from Army doctrine regarding logistics supply points. Pagonis was determined to design a logistics system that was flexible and responsive enough to act as a true force multiplier for the combat forces. He developed his own unique version of the "logbase."

40. For centuries, armies had built supply bases in their rear areas to stockpile supplies and equipment needed to prosecute battles along relatively stationary fronts. When the fronts moved, the

supply bases had to be moved with them-an often laborious and lengthy process. Armies were invariably tied to these immobile supply points. General Pagonis's idea was to add a new twist to the supply base concept. He constructed logbases at key points in front of advancing coalition combat forces so that supplies would be readily available as forces advanced on the enemy.

41. Pagonis made two key distinctions between supply bases and logbases. For Pagonis, a true logbase was a temporary point where only certain expendable classes of supply (food, water, fuel, and ammunition) were stored with minimal accountability. This was in stark contrast to the traditional supply bases described in army doctrine that contained all classes of supply, each item of which had to be carefully accounted for at all times-even during combat. Pagonis knew that Air Land Battle required tremendous flexibility and responsiveness of both combat forces and logistics capabilities. He was convinced that his logbases were the key to providing these attributes. Mobile supply points meant that logisticians could travel with combat forces; expendable assets meant that securing the bases was not an issue. Pagonis assigned a specific Combat service support (CSS) unit to run each logbase and charged them with destroying the base if the enemy threatened to overrun it.

PLANNING FOR THE GROUND WAR

42. As General Pagonis oversaw implementation of the sustainment phase of his operation, General Schwarzkopf finalized his operational plan for the ejection of Iraqi forces from Kuwait and the destruction of the Iraqi Republican Guard. His plan hinged on two key logistical concepts: first, finding a way to support two corps from forward bases located more than 350 miles from the main aerial ports of demarcation (APOD) and Sea ports of debarkation (SPOD) and, second, to reposition the two corps to take advantage of each one's unique capabilities. The latter undertaking meant moving over 350,000 personnel and thousands of vehicles hundreds of miles over open desert without being spotted by the Iraqis.

43. General Pagonis and his planning cell quickly developed a five-phase logistics plan to support Schwarzkopf's concept of operations. Phase Alpha would preposition supplies and shift Support command (SUPCOM) units to provide logistical support once the combat forces moved forward. During this phase, logisticians would receive and move VII Corps to its Tactical Assembly Area (TAA). Phase Bravo would be the simultaneous movement of the VII Corps and XVIII Corps to their Forward Assembly Areas (FAA) using Support Command (SUPCOM) and Corps Support Command (COSCOM) transportation assets. Logisticians would construct logbases to provide needed support. Phase Charlie would be the support and sustainment of the ground offensive into Iraq and Kuwait. During this phase, which would commence on order at the start of the ground

campaign, logisticians would build additional mobile logbases deep inside Iraqi territory and stock them with critical supplies like food, water, ammunition, and fuel. Phase Delta outlined logistics support for the defense and restoration of Kuwait. It would commence concurrently with Phase Charlie once coalition forces liberated Kuwait City. Phase Echo would be the redeployment and closure of the theater and would commence as soon as the ground campaign ended.

IMPLEMENTING THE LOGISTICS PLAN

44. After Iraqi military forces launched a surprise attack against Kuwait and US. military began deploying equipment, supplies and personnel to strategic sea ports and air ports in Saudi Arabia. US-Central Command (CENTCOM) was responsible for overall in the operation of logistics management. It developed policy, monitored and coordinated transportation and distribution operations. Central Command delegated specific theater wide functions to the Army, Marine Corps, and Air Force while all three services stored and provided security over equipment and supplies. Army was responsible for a sea port and air port operations as well. It also managed the surface transportation and distributed common items such as food, clothing, lubricants, and munitions . General Pagonis had implemented the logistics plan based on five phases during the operation of desert storm.

PHASE ALPHA.

45. General Pagonis' five-phase plan worked extremely well and as part of Phase Alpha, logisticians constructed four theater log bases as Bastogne, Pulaski, Alpha, and Bravo. Bastogne, the first logbase was 150 miles northwest of Dhahran. It supported XVIII Corps in its Tactical Assembly Area (TAA) and was located on Tapline Road which was a key Main Supply Route (MSR) in theater that paralleled the Kuwaiti border and ran almost the entire length of Saudi Arabia. Pagonis held with his experiences and argued successfully that logbases benefited the corps very little when they were located in the rear. He insisted that Bastogne was perfectly positioned between XV Corps and Kuwait, thus allowing maximum flexibility no matter which direction the corps went. Battalion helped to establish Logbase Alpha to support VII Corps in its TAA.

46. Logbase Alpha was on accumulating enough supplies of rations, water, bulk petroleum products, and ammunition to support 113,000 soldiers. The base eventually grew to 30 by 30 miles wide. Logbase Bravo, the major theater prepositioned supply hub was located just south of *King Khalid Military City*(KKMC). It was established and designed to support 250,000 soldiers. It contained, among other items, like clothing and organizational equipment, barriers and other engineer type material, rentals, busses and trucks. Once the four main theater supply bases were built and stocked, final details for Phase Bravo were completed. Logisticians had to find a way to reposition two entire corps over several hundred miles of desert in only 21 days. In addition, logisticians had to find a way to resupply the corps once they moved hundreds of miles away from

their main supply bases. The day that air campaign against Iraq was commenced and logisticians began Phase Bravo.

PHASE BRAVO.

47. One of the first tasks of Phase Bravo was construction of Logbases Charlie and Echo. These were the true "logbases" that General Pagonis had envisioned. Selectively stocked and mobile, they were markedly smaller than supply bases Bastogne, Pulaski, Alpha and Bravo. Logisticians had to wait until the air war had blinded the Iraqis to begin constructing the bases since earlier American activity around KKMC had resulted in the Iraqis shifting several divisions to a point in southern Iraq roughly opposite the base. Logbase Charlie was situated northwest of KKMC to support the XVIII Airborne Corps. Logisticians organized and stocked it to support 111,000 soldiers. Logbase Echo, also was located due north of KKMC, just north of MSR Dodge. Logisticians finished stocking the base with rations, ammunition, and additional fuel after the air war began.

48. They also established a Tactical Petroleum Terminal (TPT) to enable rapid fuel delivery to the battlefield. General Pagonis and his staff were undaunted and set to work proving the efficacy of Pagonis' new mobile logbases.

PREPARING TO ENTER THE FRAY

49. Colonel Daniel Fairchild divided his support battalion into two parts in anticipation of the ground war. He organized a small, mobile contingent of vehicles and personnel to move forward with the Division. He designated another element, known as "Fat Lady" comprising approximately 500 soldiers and 250 vehicles, to remain at the log base until 24 hours after the entire division had passed there.

50. Phases Charlie and Delta; On 24th February 1991, the ground war, and Phase Charlie, commenced. Phases Charlie and Delta required logisticians to support combat units in battle. Logisticians initially anticipated building four additional mobile log bases within Iraq to support the ground war.

51. General Gary Luck, XVIII Corps Commander, ordered a brigade from the 101st Airborne to construct a forward logistics base at Objective Cobra. Over the next few days, Log base Romeo rose out of the desert sands as logisticians delivered more than a million gallons of fuel and tons of food, water, ammunition and spare parts to the new-style logbase.

52. They loaded up fuel and ammunition on trailers in anticipation of a grueling resupply effort to the forward located logbases.

53. On 26th February, the division turned east and began to march toward the northwest Kuwaiti border. At 1430, the units halted for refueling and the brigade commander ordered Colonel Fairchild to establish a Brigade Support Area (BSA). Under the BSA concept, medical and fuel assets would continue to advance with the combat units, while remaining logistics elements established the site. This meant that logistics personnel were split into three groups: those moving forward, those at BSA, and those trailing behind in the "Fat Lady." This set-up gave them the flexibility to support combat forces wherever and whenever they engaged with the enemy.

54. By late afternoon, on the 26th Colonel Fairchild had reconsolidated all of his logistics elements and his supported brigade moved forward and began a protracted battle with the Iraqis. It was during this engagement that the usual problems facing logisticians surfaced. Lack of fuel was the most severe.

55. General Pagonis later commented that he had kept fuel vehicles in reserve for just such a contingency. With immediate he learned of the fuel crisis, General Pagonis dispatched the fuel reserves.

56. Another resupply corps General Pagonis pulled off was getting water to combat troops during the battles. Anticipating that drying out would become a major limiting factor for American forces engaged in drawn-out tank battles in the stifling desert heat. General Pagonis arranged for a water resupply unit of 400 trucks to deliver water right to the troops during the battles. General Pagonis's uniquely innovative approach to logistics was hidden from view only by his genuine concern for people.

57. Phase Echo. On 28th February 1991, President Bush announced a cease fire and America's most effective combat action came to a close. However for logisticians, the cease fire was just the beginning of another demanding stage of their operation. Phase Echo, also known as Desert Farewell, called for the redeployment of hundreds of thousands of personnel, tens of thousands of vehicles, and tons of equipment and supplies, back to their home bases. From the start of Desert Farewell, Logisticians responded by arranging the first symbolic redeployment of troops. Tens of thousands of vehicles also required repainting since they had been painted in desert camouflage when they arrived in theater.

58. By 1st April 1991, General Pagonis and his logisticians had overseen the redeployment of over 165,000 troops. On 11th April, the Iraqis signed the formal cease fire and the VIIth Corps retraced its steps to Theater Army Area Command. Logisticians continued to scour the country side rounding up lost or abandoned equipment and supplies. By January 1992, Phase Echo was just about over and General Pagonis was finally able to declare his portion of Gulf War operations officially closed.

NEED OF HAVING A MILITARY LOGISTICAL INFRASTRUCTURE WITH ADEQUATE TRANSPORT CAPABILITIES

59. The Gulf War is considered to be the largest military logistics operation in the history. In a record breaking time, the United States and its allies deployed troops and supplies halfway around the world against enormous constraints. The successful completion of war provided many logistics lessons for commanders to think of

60. According to General William G Pagonis, the biggest problem they had in the Gulf was the shortage of transportation related equipment. Though, sea lift was not in their domain, it was clear to those in the Gulf that, the US needed to augment their sea lift capabilities.

61. The heavy equipment transportation capabilities of the US were minimum. They had only 120 Heavy Equipment Transporters. They might not have made it possible in the Gulf without the

Heavy Equipment Transporters that Saudi Arabia, Germany, Egypt and eastern bloc so generously provided.

62. Further/ lack of Heavy Expanded Mobility Tactical Trucks (HEMTT) which could traverse through the rough terrain made their march difficult.

63. The General Pagonis highlighted that having a proper military logistical infrastructure with adequate transport capabilities was the key logistical success in the war.

EFFECTIVE AND EFFICIENT PROCESS OF MATERIAL HANDLING

64. The next major shortage was the lack of Material Handling Equipment (MHE).As was the case with Heavy Equipment Transporters, US managed to rent or lease these equipments. But those 500 ships, thousands of airplanes and millions of tons of equipments that they carried would have been utterly useless without the means to unpack them and prepare their contents for transshipment.Third key shortage was in the refrigeration vans needed to keep water cool and food edible. All these had to be rented in the theater.

65. Processing containers in the theater was extremely difficult for number of reasons. US received shipments from 64 ports across the world in to two seaports in Saudi Arabia. The main contributing factor was the multiple consignees to a single container .US had numerous mixed loads and even large number of unidentified containers. The documentation on the ships manifest didn't always match with what was in the containers.

66. General Pagonis ordered that 90% of incoming shipments had to be single consignee and remaining 10% if absolutely necessary, could be mixed.

DOCTRINE OF SINGLE POINT OF CONTACT

67. Army's logistical doctrine doesn't need to be fixed. Doctrine moreover is not revised on the basis of one data point but on the basis of multiple data points. Had US followed the doctrine to the letter and not created the support command, they would eventually have had several logisticians simultaneously attempting to control critical and limited logistical resources.

DIVISION OF TOTAL OPERATION IN TO A SERIES OF LOGISTICS BASES

68. Logistics made the historic buildup and the movement possible, much leeway was given in devising new tactics to suit the Persian Gulf conditions. Most importantly, Genral Pagonis devised a

series of log bases, or supply depots that would be strategically placed near the front, instead of being placed far behind combat forces, as traditionally done.

69. The general Pagonis determined that “The biggest problem was getting limited resources to everyone on an equal basis,” he further believed that “Doctrine will not work alone. Therefore Tailoring logistics as a concept was considered as the real way to go.”

70. The success of logistics in the gulf war contributed immensely not only for the military logistics but also made major contributions in reshaping the commercial supply chains.

FOCUS ON SPEED MORE THAN ON MASS

71. Under the conventional military doctrine, US would have sent millions of soldiers marching through the dessert , supported by a mountain of materiel clothing, medicines, food, fuel, and so on to secure lines of supply all the way to the front line../ Instead, US focused on speed more than on mass and had profound implications for the way US handled logistics in the operation. Commercial supply chains may be able to draw a few lessons from their efforts to accommodate soldiers in the field.

MAKE COLLABORATION A REALITY.

72. The ideal supply chain for most businesses is, close collaboration and management of logistics. The challenge was to achieve “jointness” ,through the integration of the theaters to make them more reliant on one another. They created a single logistics back room that meant all their ground forces in the operation to facilitate communication among them,

In large part, they relied on private-sector service providers, distributors, and suppliers to provide the theaters with fast, flexible, and decisive support.

MANAGE THE FLOW, NOT THE INVENTORY.

73. In the conventional military Planners, called for 60 days of supplies to be accumulated in the theater, prior to ground attack. That experience underscores a truth that commercial logisticians know well: Well-stocked inventory that doesn’t get where it is needed does not deliver value. Supply chain excellence consists of knowing exactly what you have / the condition and location of the items, / whether they are on order, in transit, or in theater/ and managing the flow of materiel in light of shifting patterns of demand and customer requirements.

74. It was a daunting challenge but one they were able to overcome. / The key is to combine this predictability with the right amount of reserve supplies in a consolidated pipeline/ that can deliver a steady flow to combat units. Support was delivered where it was required, when it was required, and the waste associated with “Iron Mountains” of unused supplies was avoided.

LESSONS LEARNT AND CONCLUSION

75. Running Logistics for the Gulf war is compared to transporting the entire population of Alaska, along with their personal belongings to the other part of the world in short notice.

During the total duration they planned, moved and served more than 122 million meals which were compared to feeding all the residents of Wyoming and Vermont three meals a day for forty days. Supply units pumped 1.3 million gallons of fuel / which was seven times higher than the fuel consumption of Washington DC for the same period.

76. In the same period supply units and their contracted drivers drove almost 52 million miles in the war theater / which was equal to more than 100 round trips to the moon. Or more than 2000 trips around the world or more than 10000 round trips from Los Angeles to New York. These statistics talk volumes about the magnitude and contribution made by logistics in to the successful completion of Gulfwar.

77. I quote "Logistic is traditionally an unglamorous and underappreciated activity. To generalize, when the battle is going on well the strategists and tacticians are lionized ,it is only when the tanks run out of gas that people go head hunting for the logisticians." I unquote.

78. General H Norman Schwarzkopf specially praised / that the thousands of men and women / who had built and run his logistical operation, and thereby made the celebrated end run possible. It was an absolutely gigantic accomplishment, general Schwarzkopf stated. And further he said I can't give credit enough to the logisticians and the transporters who were able to pull this off.

79. Appreciations and praises made by General Norman Schwarzkopf is the commanders self appraisal and commendation about the notable contributions of logistics during entire campaign. Military learns lessons on many different levels. These lessons are not necessarily durable and they need revisions within hours or days / what is certain today will be uncertain tomorrow.

80. The Gulf war is considered to be the largest military logistics operation in history. The successful completion of war provided many logistics lessons for commanders to think of as highlighted during the presentation. With that insight I conclude our presentation and the flow is open for question and answer session.