Command and Staff and Staff Classes of December, 1945

THESIS

NAVAL LOGISTICS

WORLD WAR II

Submitted by

Lieutenant Commander Wm. H. Hahn (SC) USNR
(Name)

Staff Class - December 1945
(Class)

#109
(Room No.)

20 November, 1945

NAVAL WAR COLLEGE
Newport, R. I.

NAVAL LOGISTICS

WORLD WAR II

* * * * *

THESIS

WILLIAM H. HAHN

STAFF CLASS

December 1945

* * * * *

20 November, 1945

U. S. NAVAL WAR COLLEGE

Newport, R. I.

TABLE OF CONTENTS

NAVAL LOGISTICS

WORLD WAR II

- INTRODUCTION -

I

Fleet Logistics was looked upon with little interest prior to World War II since it was not necessary to maintain advance bases and fleets at sea or ships great distances from replenishment points.

Operations plans and/or orders carried the Logistics statement "existing procedures will be followed" or the Logistics paragraph was left blank. This was all true, our ships operated from nearby points and these points were well equipped and fully stocked with all manner of supplies, materials and provisions.

But, the Pearl Harbor attack brought new light and interest upon this seldomly used and supposedly dull subject. Our leaders foresaw a global war . . . a problem of foresight.

Consequently, a definition of Logistics was required to solve the far-reaching problems of which this country was confronted.

Lieutenant Colonel G. C. Thorpe, United States Marine Corps, graduate of the Naval War College, states in his book, Pure Logistics - 1917; "Napoleon never used the word "Logistics", he simply employed all the elements of Logistics necessary to war in his day, as he did the elements of strategy and tactics. But while he conceived the last two named functions as distinct divisions of labor, he did not realize (except when it was TOO LATE) that logistical functions comprised a third entity in war functions".

Since 1941 the United States Navy grew from two and one half million tons to fifteen million tons of naval vessels, with an additional one hundred thousand ship units.

All these vessels, by size and type, must be maintained, fueled, armed and repaired.

Prior to December 1941, the Naval Aviation arm had less than four thousand planes in use, this figure included all types; trainer, fighter and transport, etc. As of VJ Day, the number of Navy planes in operation would be purely conjecture. During the war, Naval operations were based on over nine hundred shore establishments which included approximately three hundred newly constructed advance bases.

The most important logistics include the approximate five million officers, men and women of the Navy, Coast Guard and Marine Corps. It must be remembered that each and everyone must be housed, fed, clothed and transported and trained. This is logistics!

Our leaders were cognizant of past war successes and failures and the winning of this war had to be successful. Therefore, this definition is offered; - Logistics is the service to be rendered to our Armed Forces which includes the supply of material and personnel and the combining of procurement, storage, distribution and transportation of both supplies and personnel.

In early 1942, the Commander in Chief, Pacific Fleet, organized a Logistical Board made up from Army, Navy, and Marine Corps officers, whose prime function was to advise the Commander in Chief of all problems and information at hand. The office of the Director Advanced Base Planning Unit was established and met all requirements of the newly formed advance bases established in the Pacific Ocean area.

In September 1943, a Logistic Division of a Joint Staff, under the Commander in Chief, Pacific Fleet and Pacific Ocean area, was established made up of officers from our combined services comprising the following sections:

Transportation and Priorities

Fuel and Lubrications

Supply (General Supplies,
Aviation materials etc.)

Planning

Medical

Construction and Engineering

Administration and Statistics

Communications

Ordnance

As the war progressed other sections were established to meet the required situations.

In the office of the Chief of Naval Operations, a higher echelon for logistics was established and coordinated with the Joint Chiefs of Staff. This Logistic Planning Division is a planning agency whose functions are closely interwoven with the Planning Division of the Staff of the Commander in Chief and the Bureau Planning Section.

During the years of World War II, many problems were met and solved. Logistics was an established factor and grew in importance to a point where it was vital in aiding our forces in conquering the area controlled by the enemy.

II

LOGISTICS - DECEMBER 1941

Shortly before o800 - 7 December, 1941, the "Back Stabbers" started a war that concluded their bid to be a World Power as they hoped for many generations to come. That act brought about a situation to be faced by the United States which was one of survival for the present, immediate preparation and planning for the offensive and defensive action up to the point when we could begin our plans for the ultimate defeat of Japan.

It is believed that 7 December, 1941 could be considered as the birth of War Logistics as we speak of logistics today.

At approximately 0900, the Supply Officer, Navy Yard, Pearl Harbor, - Rear Admiral J. J. Gaffney (SC) USN (then Captain) had all the Supply Officers on duty in the Navy Yard, Pearl Harbor (numbering less than twenty-five) assemble in his office in Building #9 facing #1010 pier. With a sweep of his arm which included Pearl Harbor, a most terrifying sight to behold, Admiral Gaffney's words, in effect, were; "Gentlemen, this is War - this is what you (as Supply Officers) were trained for. Go out there and make issues where they are most needed. Keep records when and where possible, but also remember, you can't stop bullets on paper". Needless to say, all those Supply Officers knew what was to be done and how it was to be done after hearing those words.

By noon, bits, pieces, and scraps of paper were finding their way to the Supply Offices. Supplies were issued by priority and spread out by quantity. By logistical reasoning, the thin thread held.

Firearms were issued only to Naval Personnel, rain-clothing to personnel able to repel the enemy, fruit

juices and soap to hospitals, gasoline to all vehicles used as ambulances, helmets to all exposed to gunfire.

Wounded and dead were being brought ashore - blankets, cots and mattresses were quickly concentrated in firstaid areas and in hastily thrown together shelters. An interesting example of efficiency occured when a call came for stretchers . . . there were no available stretchers at the time, all had been used, but an officer soon had canvas being torn into 4' x 6' squares and 2" x 2" x 6' lengths of wood being cut and with the addition of a few nails, the lack of stretchers was quickly overcome.

What has this to do with logistics? Supplies and replacing of supplies is part of logistics - a very important part. The study of supplies used for any purpose is reference material and the pieces, bits, and scraps of paper sent to the Supply Offices, 7 December, 1941, showed USUAGE of material that had to be replaced. But supplies alone do not comprise the major part of logistics, nevertheless, since supplies are used by personnel, then personnel must be included. Ships must carry the supplies and personnel, so ships also must be considered, Most assuredly radios, ammunition, fuel oil, gasoline, airplanes are necessary and all those facts must be included in the overall logistical planning.

III

SITUATIONS IN EARLY 1942

When Japan occupied the Marshall-Gilbert Islands and rapidly moved into the Antipodes, the only area in which the United States could establish or build a base, from which to hold a staging and/or offensive, was Australia. By then, our shipping routes were threatened by land based Japanese aircraft from these nearby islands, also, they had established ports in these islands where were based quick-striking surface units.

Bora Bora was the logical place to establish a United States base from which to counteract the Japanese onslaught and protect our cargo carriers to and from Australia. Bora Bora had no modern installations such as storage tanks, refrigeration, capable power plants, nor piers. Having no piers available meant difficulties in stores handling. Once the facility for stores handling is overcome, the job of building a base is relatively easy. With no time to build piers, careful and intelligent logistics planning solved the problem. Ships were loaded with the necessary materials and pontoon sections were carried as deck cargo or loaded last. Upon arrival at Bora Bora, sections of pontoons were welded together, lowered over the side and they became lighters that could be towed close to shore and unloaded at small, quickly constructed piers. The work of building the base progressed rapidly and soon our supply lines to Australia were protected.

III (a)

CVE PROGRAM

In early 1942 the Wolf Pack sub menance in the Atlantic and the then unknown size of the Japanese Navy in the Pacific, had increasingly wrought huge losses to our

shipping. A secret weapon or some countermeasure must be devised. Our military leaders conferred and a plan of action was decided upon.

Immediately several huge oil tankers were converted to carrier escort vessels (CVE's). A number of these vessels were pressed into service and were quite effective in countering the German submarines in the Atlantic - no longer could they roam the sea and sink our vessels at will. These submarines soon knew fear of the small effective planes catapulted from a bobbing CVE flight deck. There were those who thought this could not be done but study proved it could and soon German submarine losses grew and our ship losses diminished.

This first, small, fleet of CVE's was so effective that plans were made to build fifty more CVE's. Kaiser Shipbuilding Corporation, Vancouver, Washington, was awarded the contract to convert C-3 hulls to CVE's. The Navy's experiences in usuage of the first CVE's were studied and the logistics plan formulated.

These ships required a definite complement of men and officers to man them. Since the flight deck was smaller than a CV-Essex class ship, fewer aircraft could be launched and only definite types or models could be used aboard. Data was collected regarding radio-radar, anti-aircraft gun protection, messing, berthing and the general scope of shipboard necessities. The Logistics Staff assigned this project, tediously and unerringly centralized the data then decentralized the functions placing definite responsibility and authority in agencies well acquainted with the various phases of completing a fighting ship.

To illustrate briefly as possible how this was accomplished; Bureau of Ships kept a progress chart

showing the date the keel was laid and on through the various stages of development and building process to the final commissioning and acceptance date by the United States Navy. This progress chart was the "Bible" by which all other Bureaus, Training Stations, Supply Depots, and other agencies made shipments, fulfilled committments and fitted their individual pieces to the giant jigsaw puzzle.

For example; the keel for a ship was laid in January, commissioned in May, 1944, reporting to the Fleet for duty and ready for action, June, 1944. During these six months, much work and planning had to be done, not taking into consideration the gigantic plans made prior to the laying of the keel.

This particular project differed from all other past shipbuilding programs since the ship was built in a private yard in Vancouver, Washington, and then delivered to the Navy at Astoria, Oregon - a distance of one hundred miles from the original starting point. The Captain, Executive Officer, Heads of Departments, plus key personnel, saw their ship for the very first time less than twenty-four hours before it was commissioned.

Emphasis must be placed upon the coordination of the various Navy Bureaus and agencies, inasmuch as the vessel was destined to be a complete fighting unit within twenty-six days after the commissioning date! And it was accomplished!

Bureau Personnel ordered a crew of seven hundred men to each CVE, reporting at Bremerton, Washington. These men were given instruction at the CVE Precommissioning School for a three months' period, concentrating on the overall shipboard requirements, since the majority of the crew were recruits. Then each Division of the ship was instructed in detail regarding the functions of their

assigned duties, i.e., Engineering Division received instruction in pipefitting, engine room functions and routine, etc. Prior to coming aboard their own ship, the entire crew made a weeks' cruise on the USS Casablanca in the Puget Sound area.

The Supply Officer and his Assistants were ordered to Astoria, Oregon, sixty days prior to commissioning. It is to be remembered that the ship was delivered with only enough fuel oil to traverse the one hundred miles down the Columbia River - and - that was the total extent of the supplies on board. Foresight and logistics insured that the Supply Officer was furnished with Ships' Allowance lists, master requisitions and other necessary data. Dates were shown when supplies were due to arrive and the source of supply. As an example; supplies and equipment were delivered from Seattle, Oakland, Naval Observatory, Washington, D.C., Clearfield, Utah, Mare Island, California and Philadelphia. Contemplate the diversified and widely separated points from which this material was delivered, yet the information was complete and aboard ship and had been so coordinated that a "bottle neck" was not caused by non-delivery of supplies.

With the complete data on hand, the Supply Officer was equipped to make his plan where to stow what - how - where - and when, even before the receipt of the material.

Ships' Officers were ordered to the ship by Bureau of Personnel, reporting on dates planned, when their services would be required. As an illustration; the Communications Officer and his complement reported <u>thirty days prior to commissioning</u>, to set up required files and make corrections to their publications and familiarizing themselves with the equipment which had been installed and was in operating condition. The Combat Intelligence Center

gang reported three days after the commissioning date and the ships' crew three hours prior to commissioning and was mustered and marched aboard.

In the meantime, Bureau of Aeronautics had in training, several air groups and one group was assigned and came aboard each ship when it reached San Diego. The Carrier Aircraft Service Division (CASD) had been training on the West Coast and reported aboard when the Squadron was assigned.

Gradually, but surely, the pieces of the jigsaw puzzle took shape. The ship left the Columbia River area on time and with all the equipment aboard as scheduled. It proceeded to Puget Sound, calibrating equipment and there took on fuel, ammunition, more supplies, and men. Drills were held, more equipment tested and finally on the scheduled logistics plan the ship proceeded to San Diego to pick up her squadron. In a few weeks all hands were used to the roar of propellors, screech of tires on landing circle and the jargon of the aviators, all departments were functioning smoothly and another important fighting unit was ready for action.

Attention is invited to the fact that only six months have elapsed since the steel decks were no more than perhaps ore in the ground and possibly a great majority of the men complementing that fighting team were farmers tilling the ground.

It should be recognized that in accomplishments like this our logistics planners performed miracles.

The CVE project was taken as an example, since it is "believed" that this shipbuilding program of just one of the fighting units of our great and powerful Fleet was the most spectacular and outstanding example of World War II.

IV

FUEL IN THE PACIFIC

In many ways, fuel was the key to the Pacific War. In the peacetime years, all fuel for the Fleet was purchased, paid and accounted for by the Inspector of Petroleum at San Pedro, California and then distributed by tankers to our West Coast ports, Hawaii and other Pacific bases. But since the Japanese held practically all bases west of Hawaii, shortly after the start of the war, that meant all the United States fighting units were compelled to return to Hawaii for fuel.

Therefore, the need for a replenishment program was self-evident and determination of requirements was made. First; by Fuel Officers on the Staff of Service Force, Pacific Fleet, Service Squadron Eight - and second; by the Area Petroleum Office which coordinated supplies under Commander Service Force, Pacific Fleet.

Stocks had to be maintained in sufficient quantities to meet any emergency demands which might arise. An effort was made to maintain a reserve of sixty days' supply in the war theatre and this did not include approximately thirty days' supply which was on the water and enroute to the operating areas at all times.

The Combined Chiefs of Staff setup the approved levels for each theatre; the most recent directive issued before VJ Day, expressed those levels as thirty days operating level in the Central and South Pacific; fifty-five days emergency level in the Central Pacific; and forty-five days level in the South Pacific. The theatre level was eighty days in the Central Pacific and seventy-five days in the South Pacific; this level being the sum of operating level plus the emergency reserve fuel level.

Supplying our Pacific bases was accomplished by about three hundred tankers; approximately sixty of these tankers were customarily employed in the Southwest Pacific service.

Normally, these tankers operated on a forty day cycle to Pearl Harbor at the beginning of the war when a slow ten knot convoy system was prescribed. In 1945, three years later, those slow tankers had all been replaced by fast vessels, approximate speed, fourteen and one half knots which cut the Pearl Harbor cycle to twenty-two days.

The cycle for the spread of oil to the Western Pacific was roughly seventy-five days, with sixty days underway to and from loading ports, and fifteen days in the discharge area. There was a concern that we might not have the ships to carry the amount of oil required for the fast moving Fifth Fleet which alternated with the Third Fleet.

In August, 1944, it was estimated that a total of two hundred and eighty tankers would be required to move a total of thirteen million one hundred thousand barrels of combined fuel oil, diesel oil, motor gas and aviation gas into the Pacific Ocean area to meet operational requirements during February, 1945.

For example; approximately eight million barrels per month of fuel oil alone was required for the Marianas campaign - of this amount, approximately five million barrels was required by the Fifth Fleet in its operations during this campaign.

When fueling at sea, the rate of discharge of fuel oil etc., under good conditions would run from two thousand barrels an hour to a destroyer; four thousand barrels an hour to a cruiser; and six thousand barrels an hour to a battleship or large carrier. The average, of course, is less than that, but there is a case where the U. S. S. Taluga, on her first job on the "line" pumped

seven thousand eight hundred and twenty-five barrels into the battleship U. S. S. South Dakota in one hour.

The graphical picture showed that the average aviation gasoline consumption for the Pacific Ocean area, in gallons per day, increased from one million two hundred and twenty thousand gallons in October, 1944 to two million three hundred and fifty thousand gallons in March, 1945. This tremendous increase in usage of aviation gasoline was due to the operations of the B-29's bombing Tokyo from our Saipan-Tinian bases. By use of the logistical data and operations plans, the Army and Navy Petroleum Board was able to provide sufficient tonnage to meet clean requirements, and the combat fuels (aviation gasoline and diesel oil) were never found short in the forward areas.

One of the most important factors in the issue of fuels in the Pacific theatre was the fleet of fast oilers which belonged to Service Squadron Eight. They operated with the Logistic Support Group in support of the operating Task Forces. This "pipeline" was said to contain the "life blood" of the Fifth Fleet.

This force actually performed with Admiral Halsey's Third Fleet from 17 August, 1944, to 27 January, 1945, inclusive. It was designated as Task Group 30.8, a special group of Task Force 30, operated under the direction of the Command Third Fleet, for the purpose of fueling at sea the aircraft replacement and Fleet Tug Service in support of Task Force 38 during combat operations.

The normal composition of this group was twenty-four Fleet oilers; three Escort Carriers (CVE's); four Transport Carriers (CVE's); eight Destroyers; eighteen Destroyer Escorts; and Fleet Tugs as assigned by Commander Third Fleet.

Fueling areas were predetermined, as outlined in the operations plan, to suit the operations of Task Force 38. These areas being located in the combat zones and exposed to enemy operations. Time and positions of fueling and services were given despatch from Commander Third Fleet. Upon meeting Task Force 38, at an appointed rendezvous, fuel oil, aviation gasoline, planes, provisions and other supplies were transferred and the fast Carrier Task Force was "rejuvenated" and off for another strike at the enemy.

Almost every phase of this past war at sea has fuel storage in the background. When the war started we had about three million barrels of fuel oil stored at Pearl Harbor. Fortunately, when the Japanese struck, not one of the oil tanks were hit. For the first two months nearly two million barrels were issued and it was necessary to "step up" deliveries from the West Coast as the fuel oil situation was considered critical at Pearl Harbor. The Red Hill storage of approximately six million barrels was under construction and was scheduled to be completed by July, 1942.

About this same time, and bearing in mind that delivery of fuel oil must be "stepped up", one project was conceived and which no doubt played an important part in filling partially the Red Hill storage tanks. This project was the Panama Fuel Pipe Line.

This twenty million dollar project, which could be termed as another "Naval secret weapon", has had little or no publicity. As of September, 1945, the entire project was more than ninety-five percent completed and, although was not widely publicized in this war, may tend to be a potential factor in deciding a non-aggression attitude from a future, war-minded nation.

The original conception of this pipeline took form in August, 1942, as the joint project of Chief of Naval Operations, the War Department, and the Petroleum Administration for War. The decision for its erection was reached at a secret meeting of some twenty officers of the Army and Navy, which delegated responsibility for its construction to the Chief of the Bureau of Yards and Docks. The meeting fixed the pipeline goals at a capacity of one hundred and five thousand barrels of fuel oil daily across the Isthmus of Panama, and another pipeline with a capacity of thirty-five thousand barrels of diesel oil or gasoline daily.

The original purpose of this pipeline was to serve as a secret supply artery from the Atlantic to the Pacific in the Canal Zone, should the Panama Canal have fallen victim to enemy action. The pipeline proved so efficient and strategically valuable and the requirements of the Pacific Fleet became so great that the capacity of the pipeline was more than doubled by building a duplicate pipeline prior to the completion of the first one.

Thus, there were two, twenty inch, fuel oil lines, one, twelve inch, gasoline line and one, ten inch, diesel oil line. The original pipeline was completed in October, 1943, but it had been in use months before its initial completion date, serving the Pacific Fleet and relieving the enormous traffic congestion in the Panama Canal. The twenty million dollar cost included forty-six miles of pipelines and pumpint stations - the entire project having been ninety-five percent completed (or more) as of 24 July, 1945.

* * * * * * * * * * * * * *

V

TRANSPORTATION

Not only did the United States Naval vessels transport millions of tons of freight, but also, two other agencies were created to transport and expedite a volume of materials and supplies in amounts never to be definitely calculated.

The first of these newly created agencies was the War Shipping Administration (WSA) which was created in February, 1942; the second was the Office of Defense Transportation (ODT) which was created in late December, 1941.

The War Shipping Administration was authorized to requisition all ocean shipping under the American Flag, to seize enemy vessels in American waters, and to control the operation of all these vessels as well as all those embraced in the expanded construction schedules of the Maritime Commission.

An organization was effected that placed the War Shipping Administration representatives in all principal Allied ports which coordinated the activities of the American Merchant Fleet with those of our Allies and placed Anerican ships under the operation of one hundred or more private shipping companies acting as War Shipping Administration agents.

Since the United States was fighting a global war, that meant ocean transportation over the world sea lanes. Our enemies were to the east and to the west. The eastern enemy meant a shorter ocean haul, but just as potential as our western enemy. Therefore, it was necessary to carry on our offensive action simultaneously. The war against Japan, compared with that of the European campaign, was on a greater scale. The contrast between the two opera-

tions, carried on at the same time for three and one half years, became particularly pointed as all Allied power was turned to the Pacific. Logistics in the Pacific was so complicated and so intensified as to be totally different from what had gone before.

In 1942, men, supplies, and equipment were moving from the East Coast of the United States to Europe and from the West Coast of the United States to Australia and Alaska, with Lend Lease supplies committed to the Allies that had to be delivered, and, at the same time raw materials had to be brought into the United States from other countries to continue our manufacture of armament and war materials and so forth. This was a definite strain on all shipping, therefore, more and more ships were pressed into service and new ships had to be constructed.

Shipping to Europe was considered less of a task than to the Pacific due to the lack of port facilities at our Pacific bases. In 1942 our only capable port able to handle the quantities of materials needed in the Pacific was Pearl Harbor. As we extended our lines further westwar, new ports had to be constructed, thereby making the turnaround time of our shipping greater due to distances involved and the less expeditious cargo handling facilities.

If we were to increase the number of ships, we consequently had to increase the number of men to man them. In December, 1942, there were eighty-five thousand men and officers in our Merchant Marine. A year later, 1943, there were more than one hundred and fifty-three thousand and in 1945, the total rose to two hundred and forty-five thousand men and officers.

The number of ocean going ships steadily increased from 1941. Approximately seven hundred and fifty vessels

were built in 1942, bringing the total to one thousand nine hundred vessels; the addition of one thousand eight hundred vessels built in 1943, increased our Merchant fleet to thirty seven hundred and finally in mid 1945, the Merchant Marine vessels totaled forty two hundred. This figure, almost a three hundred percent increase, included only the type vessels able to transport implements of war.

In 1944, a total of seventy-seven and one half million long tons of cargo left the United States for Europe and this total was only seventy-two and one half percent of the total supplies moved. The Merchant Marine alone, carried twenty-three million tons of cargo for the Normandy invasion.

When the European war ended, the problems of the War Shipping Administration changed greatly in character and magnitude as to present a new set of conditions and the most intense activity of the entire war. Not only were the distances so much greater in the Pacific, but the kind of fighting and conditions which entailed a training course for the development of seasoned troops to enable them to meet a new kind of warfare, also changed the routine of the War Shipping Administration operations,

The difficulties in such world-wide operation were manifest. England is thirty-one hundred miles from the United States and thirty miles from Continental Europe; Manila is sixty-eight hundred miles from San Francisco and it is seventeen hundred miles farther on to Tokyo - a total of eighty-five hundred miles - just fifty-four hundred more miles to transport materials and men.

Some of the European troops and their equipment went directly from Europe to the Pacific, via a route of fourteen thousand miles, and the troops that left the Eastern Coast of the United States by ship for the

Pacific theatre, traveled eleven thousand miles. It is to be noted that for every one hundred ships that carried supplies to England, it took one hundred and twenty-seven ships to carry the same tonnage to the central Pacific; one hundred and eighty ships to the Phillippines and two hundred and twenty-four ships to the China coast. In Europe the enemy was concentrated within one area - in the Pacific, the enemy was deployed from the Marshall Islands to the Japanese homeland.

The Office of Defense Transportation has in the past three years undertaken the job of not only endeavoring to ensure that freight, men, and equipment was moved from coast to coast expeditiously, but also, to arrive ahead of the estimated time of arrival by means of uninterrupted movement schedules. To do that it was necessary to;

(a) Set up a permit or priority system regulating the movement of all freight for export, with a working agreement coordinated with other Government agencies.

(b) Speed up by every possible means the loading, unloading, and turnabout time of all freight and equipment.

(c) Secure full utilization of all equipment by requiring maximum loading of all freight cars.

(d) Set up in Chicago a system which permitted the daily rerouting of all cars west of the Mississippi river from one overloaded railroad via a less overloaded railroad, as the immediate need dictated, and all in the interest of expeditious movement.

When these four actions were effected, along with

various other agencies, American Transportation hauled over one TRILLION ton miles of freight annually and twenty BILLION passenger miles. These stupendous figures tend to illustrate to the American people what can be done materially and logistically. There were four freight consolidation stations or centers; CHICAGO - ST. LOUIS - MEMPHIS - NEW ORLEANS, (Listed in priority relative to volume).

For example; Chicago Terminal trans-shipped and shipped all freight destined for the ports of Seattle, Bremerton, Tacoma, Portland, Oregon and San Francisco.

St. Louis would handle freight for San Francisco and Los Angeles. Memphis expedited shipments to Los Angeles and New Orleans routed the freight for San Diego. The above was the principal idea, but feeder lines between the four consolidating terminals kept the freight rolling. New Orleans could very easily ship to San Francisco or Seattle. Chicago being the main terminal not only received freight from Boston, San Francisco, Norfolk, or Los Angeles, but also trans-shipped it.

A car would be fully loaded in New York with a mixed freight for varied destinations, when it reached Chicago the freight would be segregated and reloaded by full car load and the full car would be routed to its destination. The Army-Navy Consolidated Freight Agency was quite instrumental in lightening the load of the transportation of these materials.

It is to be remembered that our American Transportation System was not overly taxed during the defense period when our entire production output was going to Lend Lease. But when we started the offensive period, our transportation companies were also faced with the Selective Service demands - thereby, decreasing our man power

pool. Then, since our metals were going into ships, tanks, and other weapons of war, our factories were too busy to manufacture replacement parts for our rapidly wearing out equipment.

As time passed, it was understandable why it took priorities for travel, since it was not only the lack of fuel but also a lack of equipment and man power, yet the war materials must be moved for our offense and defense. The American people understood why our transportation facilities had to be so controlled, directed, and coordinated and also why the railways, highways, airlines, and ship travel had to be utilized to the utmost advantage.

Our pipeline system for transporting fuels extended more than forty-five times across the United States. Since this was a mechanized war taking fuels to operate the engines, this pipeline system was an important link in the over-all transportation system and released a great many tank cars for duty elsewhere.

Several weeks ago, the New York newspapers carried a news item that thirty-four thousand troops had arrived from the European theatre in New York City. These men had to be transported to separation centers all over the United States. The Office of Defense Transportation's priority system, working with precision, effected the movement of these troops from the New York area to the separation centers, in less than seventy-two hours.

Now that all hostilities have terminated, the problem of returning our troops to the United States is paramount. It took more than three years to put three million five hundred thousand men in Europe, all but four hundred thousand of these will be returned, and in addition, MILLIONS of GI's in the Pacific theatre must also be returned. This is a tremendous task, but it is believed that the American Transportation System can and will solve it.

VI

GENERAL

Prior to VJ Day the Naval logistics system was both complex and immense. In 1944, the Navy trained over one half million men and sent to sea forty two thousand new craft and twenty nine thousand planes - besides maintaining the men and equipment already in service over a network of seven hundred stations and bases which stocked in excess of four millions of varied items.

These supplies, men and materials were projected three thousand miles across the Atlantic, three thousand miles across the United States and seven thousand miles across the Pacific - all the time spent on logistic planning was not wasted, since the supplies when needed the most, arrived in time.

To conduct these logistic operations required careful planning and execution. The need for thinking out every aspect ahead of time can be shown by summarizing the preparation necessary in order to put one of our Navy air based units ashore in Kwajalein after the invasion in January, 1944.

Orders for the critical materials and equipment had to be placed in September, 1942 - more than a year before the invasion actually occured. Orders for less critical components were placed about a year prior before the attack. The critical equipment was ordered on the general knowledge, that when it was completed it would be required someplace in the Pacific.

By April, 1943, the Chief of Naval Operations specified the men and material which would be required at the Kwajalein airbase nine months later. Shortly thereafter, ninety-five men destined to become the skilled staff there began their training. In May, 1943, training of the rest

of the complement began.

Men and materials started to arrive at Port Hueneme, California, by September, 1943, and shipping preparations were made. The invasion was still more than four months away, but training and assembly of supplies continued unabated.

In October, 1943, the Commander of Chief of the Pacific Fleet transmitted his desired shipping date and schedule for the airbase unit. In December, 1943, the first two echelons of the unit began moving from California to Hawaii for further and intensified training. The actual invasion of Kwajalein occurred on January 31, 1944. Early in February, 1944, both echelons at Hawaii and those still in California got underway for the new base - fifteen months after their first equipment was ordered saw the culmination of these far-ranging plans., - and - by the time the Kwajalein units were underway, the Guam-Saipan preparations had begun.

This example was taken to show how logistics fit the jigsaw puzzle problem of our Pacific war into a neat and concise picture.

Our Admirals and the Joint Chiefs of Staff never had any thought that our plans would fail - American plans never fail - and at the same time, the Japanese did not have a breathing spell in which to recuperate from these heavy strikes being thrown at them. The persistance of our attacks constantly kept the Japanese off balance.

* * * * * * * * * * *

Another example to be shown is that of the Fast Carrier Task Forces and their ability to fight prolonged sea battles and yet stay away from bases. It is not unusual for our carriers to be underway months at a time. This was due to the rigid execution of our plans and the

fueling areas assigned as the Fleet drew closer to the enemies' shores. At the time the Japanese Fleet was sighted off the Philippines in October, 1944, our fast Carrier Task Forces had been away from a major base for over two months and had engaged in sixteen combat actions over eighteen hundred miles of the Pacific Ocean - yet, the battle of Leyte Gulf was decisively an American victory.

During September and October of 1944, the planes of one of our fast Carrier Task Forces flew over eighteen thousand sorties, expended six thousand pounds of bombs, three hundred and thirty torpedoes, seventy seven hundred rockets, plus huge amounts of fuel, gasoline and provisions - - yet it lost only three hundred planes in actual combat and operational accidents and only three hundred pilots and aircrew men were casualties. One carrier was lost and two cruisers damaged. In November, 1944, despite these losses, this fast Carrier Task Force was bombing Manila in support of the American troops hammering at the Japanese. In the interim, logistics has refurbished this force, and in December, 1945, this same Task Force was blasting, almost at will, the Japanese Coasts and the China Coast.

The belated problems of procurement, training, billeting, feeding, distribution, staging hospitalization, replenishment, and rehabilitation of personnel will remain an important factor even though the war is over. Therefore, it is necessary that logistics organizations should be kept as highly trained in peace as in war. Should there ever develop another war it will no doubt be as widely spread over the world as was World War II and will probably move at an even greater pace.

* * * * * * * * *

Aviation logistics and supply was created in early 1942, after a joint meeting of the Bureau of Aeronautics and the Bureau of Supply and Accounts - the office was known as the Aviation Supply Office and was located at the Naval Aircraft Factory in Philadelphia. At that time very few supplies were carried on hand at Philadelphia, but Aviation Supply Annexes were constructed at Norfolk, Virginia and Oakland, California. These Annexes were strategically located in order to adequately supply the Atlantic and Pacific areas.

Contracts for spare parts were awarded to the contractor at the same time the aircraft contracts were awarded. In the beginning the planes and spare parts were delivered simultaneously. This was later developed into a plan whereby, the Navy would accept the planes under condition that the spare parts be delivered first in order to place the spare parts in the various Aviation Supply Annexxes, on aircraft carriers and at airbases before the arrival of the planes in the area where they were to be used in combat or operations.

As the war developed, the pace of Aviation Supply grew. Logistics showed the usuage of different parts of engines that had to be replaced, definite parts of the airframe would need replacing in a certain number of air hours of use and would necessarily need to be replaced. As this data was collected and recorded, spare parts kits were made up and shipped with each plane when the plane left for the combat or operations area. Certain tools were required for the minor or major overhaul or for replacement of parts for the plane and these kits were made up and accompanied each service of maintenance unit.

The project grew to mammouth proportions and it became necessary to include a quantity of wings, propellors, engines, wheels, tires, and the component parts of air-

craft with each squadron based on a carrier in order to keep the planes in the air. These spares amounted to a large bulk and required stowage space on the carriers - but as each carrier left the United States, these spare parts were aboard and ready for any eventuality in the combat zones.

Later during the war, an Aviation Supply Depot was established in Espirito Santos where the carriers could fill their replacement parts there instead of returning to Pearl Harbor. Then Roi Island Aviation Depot was created - then Guam, etc. From this innovation, an old butter boat was refitted and outfitted and the U.S.S.Fortune became our first Aviation Supply ship and cruised around with the Service Squadron meeting the carriers in the refueling areas.

The Naval Air Transport Service could deliver critical spare aviation parts to the Aviation Supply Depot in Roi within forty-eight hours after the need was made known in the Oakland Supply Depot.

Looking back to these facts and their influence during the war, we can realize the great part aviation played in carrying the fight to the enemy - with logistical aid.

* * * * * * * * * *

VII

CONCLUSION

Within the Navy Department, there is at the present time, some study and thought being given to a proposed Navy Logistics School. The School would be designed primarily for the advanced technical training in logistics of Naval officers from both the Line and Staff Corps.

Its curriculum would be based upon two principal assumptions:

1. That this war has demonstrated the tremendous significance of logistics as an active influence in modern warfare.

2. That this war has revealed the complete interdependence of the strategic, tactical, and logistical elements of any operation.

The purpose of this course would be to provide Naval officers with the understanding of the place logistic support holds in the planning and conduct of Naval operations. Also, to instruct Naval officers in the methods of logistical support to the end that they, when in command, may have a full appreciation of logistical limitations and potentialities and when performing logictic duties, they may provide the greatest possible support for combat forces with the greatest possible efficiency.

A course of this nature would develop the judgment of experienced officers, who could be expected in any further emergency or war, to carry on the responsibility for formulating and placing into action the basic policies, practices, and the procedure of logistics. The officers would be acquainted with the language, fundamental problems that confronts the average man in any business. He would have a basic businessmanlike attitude with the industrial and labor organizations with whom the Navy must deal in procuring the

necessary supplies, equipment, construction materials and the transportation for a total war.

The course could be further extended to give these officers a clear understanding of how Government policies, practices, and procedures must be integrated with those of business and labor to obtain the most effective results. During this last war, we were confronted with the problems of those covered in the last paragraph. Men who have had these experiences in civilian business were brought into the Navy find ways and means of solving problems of logistic support to further our operations toward our enemies.

When a plant manufacturing critical materials went on strike, the Government was forced to take over the operation and management of that plant and iron out or placate the labor troubles. Not only were there labor troubles, but the shortages of raw materials to manufacture critical parts became apparent - ways and means by substitution or conferences with the War Production Board over critical materials were effected and the plants turned out the critical parts.

If a certain percentage of Naval Officers were given such training as outlined, it would enable our Navy planning agencies to operate in a manner common among business men of the country and the world.

* * * * * * * * * *

Four separate stages of instruction are suggested to permit officers to integrate their fleet experience with their social education and insure that education in logistics is a continuous process.

First stage; A preliminary course, while at Annapolis or Naval Reserve Officers Training Corps, to be designed to provide a general survey of the nature of modern logistics and to demonstrate to line officers early in their career, the great and at times, the governing influence

of logistics upon the conduct of military operations.

Second stage: Three to four years, after being commissioned, each officer should be required, either by correspondence course or classroom technique, to successfully pass a course in Command and this course to be concerned primarily with Command functions, but contain a good deal of study on technical logistical study. This stage would supply a sound background in logistics practices, the knowledge of which would better the officer's career. At the same time the officer could decide whether, in his own opinion, or not he was fitted for further duty for a career in logistics planning and Command in higher echelon. The officer's own decision would then decide the continuation of the third stage, either by his own application for such or by selection by the Bureau of Personnel.

Third Stage: This stage would be on a level of an advanced course in logistics combining the regular curriculum of the Naval War College over an eighteen months period. During the course, an intensive study of procurement, planning and distribution could be digested by the officer, at the same time fitting into the study of past World War II operations and use of case histories.

Fourth Stage: This last stage would be attended by officers selected for their ability and aptitude to fill positions in the highest echelon of logistics planning (i.e. the Joint Logistic Staff). This stage would be similiar to our present Army-Navy Staff College - Naval War College curriculum. It would be the final stages for the study of top Command and for the training in the integration of Army-Navy plans and policies, both strategic and logistical. Further study would include, in the military sphere, analysis of the logistical structure of every possible enemy, and on a broader basis, examination of the econom-

ical, geographic, social, political, and industrial strengths of foreign countries' war potential. The intent of this last stage would be to provide as complete information as possible for the officers engaged in the planning of future military and Naval strategy.

These four stages, interspersed in a Naval officer's career, would keep him mentally alert and cognizant of the current Naval policies, functions, plans, and strategy.

In our indiscernible future, particularly in this "Atomic Age", we would be prepared to support our policies of Peace and Freedom knowing full well, that so far as the ability to mobilize our officers, men and equipment is concerned, we could wage a successful war against any aggressor.

F I N I S

BIBLIOGRAPHY

Commander Service Force - Pacific	Fuel Oil in the Pacific
Naval War College	Basic Logistic Directives for Pacific Ocean Areas
Logistics Planning - Division of Bureau Supply and Accounts	Bureau Supply and Accounts Supply system - Continental and Pacific Ocean
C. S. Forester	Saturday Evening Post
Thorpe	Pure Logistics - 1917