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TRANSPORTATION TECHNOLOGY: LESSONS
FROM THE CAMPAIGN FOR VICKSBURG

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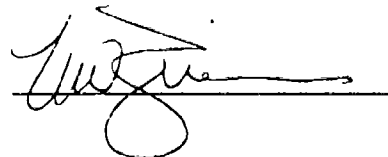
Nicholas W. Zimmon
Lieutenant Commander, SC, USN

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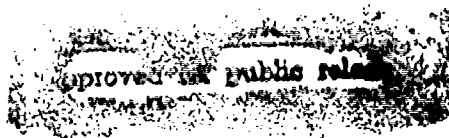
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Abstract of
TRANSPORTATION TECHNOLOGY: LESSONS
FROM THE CAMPAIGN FOR VICKSBURG

The need for operational planners to realistically consider the vulnerability of sealift and airlift transportation resources in campaign planning in today's changing world is underscored through historical analysis of Grant's first Vicksburg campaign. This unsuccessful bid for this Confederate stronghold on the Mississippi River relied nearly completely on clear rail lines of communication. Through Grant's failure to consider the nature of his enemy, rail lines and supply bases were left virtually unprotected to free-up combat forces for the campaign. Forced to call off the operation when raiding Confederate cavalry penetrated behind his lines and destroyed his supply base and railways, he realized, in retreat, that the countryside provided abundant resources to enable his army to live off the land. Thus, sustainment alternatives existed that would enable him to succeed in capturing Vicksburg. The conclusions that can be drawn from this historical analysis hold true for today. Since logistics transportation assets are likely to be seen by potential enemies as lucrative targets of opportunity, operational planning must consider the adversary's capabilities and intent, fashion a logistics support plan that considers potential vulnerabilities, and selects the best set of alternatives.

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CHAPTER I

INTRODUCTION

The United States military greatly depends on transportation technology for its logistics support. Airlift and sealift will continue to gain in importance as force structure is downsized and a "garrison" approach to basing of forces is adopted. Further, operations in the low-intensity-conflict (LIC), peacekeeping, humanitarian and nation assistance arenas will take on more importance as the world political scene shifts from a bipolar to national outlook. Moreover, with the worldwide proliferation of sophisticated weaponry, potential adversaries will continue to gain in military capability. Consequently, logistics transportation assets may be seen by potential enemies as lucrative targets of opportunity. Thus, from an operational standpoint, logistics planning must consider the nature of the campaign, the adversary's capabilities, and fashion a logistics support plan that takes into account the potential vulnerabilities of vital transportation resources.

This paper provides a historical analysis of Grant's first campaign for Vicksburg that underscores this need. With rail transport at the cutting-edge of the technology of the day, the Union's logistics support system grew to rely on the railroads. As this dependence grew, rail transport became integrated into campaign planning and execution. So too did

the need for railway security as the strategic value of the railroads was quickly realized.

For today, Grant's initial campaign is important for several reasons. First, it shows the need for security of logistics transport assets, particularly while operating in or around enemy held territory. Next, it underscores the impact and the cost of failing to fully understand the nature of the war, the enemy's capability and intentions, and the invading force's own vulnerability. Lastly, it illustrates how adherence to doctrine can limit the selection of better logistics support alternatives. The logistics paradigm of Grant's day precluded the recognition of such alternatives. It was considered an axiom of war that " . . . large bodies of troops must operate from a base of supplies which they always covered and guarded in all forward movements."¹

Today's planners face a vastly different world than did Grant. However, the lesson remains the same.

CHAPTER II

CIVIL WAR LOGISTICS

Background.

Although a seemingly much simpler time, the American Civil War era posed many logistics challenges for the military planners of the day. Logistics was an extremely difficult "science" in which little or no expertise existed. Lessons from the Napoleonic Wars served to build the initial logistics models by which the first campaigns of the war were planned and executed. However, these static models, based on a fixed area of operations, proved inadequate to support the geographic realities of the war.¹ Thus, Civil War armies quickly learned to improvise logistics support when in the field. The need for logistics standardization was obvious; the development of a transportation and supply system adapted to the demands of American geography was the solution. Railroads and steam-powered water transportation, coupled with animal-drawn field transportation and supply, would serve to shape Civil War maneuver warfare.²

The supply system that developed supported army operations from stationary military-run supply depots, normally pre-positioned before the beginning of the campaign. Depots were usually located near or linked to railway and river port terminals, as well as major road networks and commerce centers. Forward supply bases issued ammunition,

provided rations and equipment, and dispensed medical care. Regimental supply base personnel and quartermaster officers exchanged orders and supplies using military wagon trains, post riders, and contract civilian teamsters. As the war progressed, these logistic services became increasingly more effective. It became the standard by which the field armies during most of the Civil War campaigns were supported.³

The Railroads.

It was the railroad that came to the forefront of both Union and Confederate transportation systems. Becoming the first to use this means of transportation in war time, Civil War armies probably gave little advance consideration to the potential value of railroads.⁴ However, their worth was quickly realized. Able to move never-before-seen quantities of troops, war materials and supplies over long distances within relatively short periods of time, they became the centerpiece of campaign planning. Simply put, Civil War doctrine mandated, and the geographic realities required, extensive rail-based support for the prosecution of war. Railways became so strategically important that many bloody battles were fought either to protect or control them. In this way, and to a large extent, they not only determined the location, but the outcome of some of the main battles of the war.⁵

War of the Rails.

During the first year of the war, rail traffic was relatively unmolested. However, that was to change. Trains on the strategic Baltimore and Ohio (B&O) line, for the most part, ran approximately to their peacetime schedules "in spite of the Federal and Confederate troops frequently bivouacked alongside the track."⁶ However, skirmishes began to develop along the line as its strategic importance was realized. Finally, in May 1861 Confederate forces, by cover of night, attacked ten miles down the Potomac River from Harper's Ferry at a spot named Point of Rocks. What followed was chaos on the railway, added to a week later with the complete destruction of two railroad trestle-bridges at Buffalo Creek, Virginia. With nearly 100 miles of B&O main line now solidly under Confederate control, "the railway war had started in earnest, with each side trying to outdo the other in the severity of their attacks on railway property."⁷

So lucrative were the operational advantages to be gained from railroad destruction that it evolved into a "science." The haphazard "destruction-crazed" methods used during the first raids gave way to more rational methodology. For example, heating rails until they were red-hot, and then twisting them so that they were no longer usable, was too slow a destructive process. To speed things up, an iron claw was developed that enabled six men to rip up and twist rails. This device was so effective that a 500-man team could destroy

nearly one mile of track in only a few hours. Further, with speed of destruction a prime consideration during railway sabotage raids, rather than go to the time and effort of rolling a locomotive into a nearby river or lake, one cannonball into the boiler proved to be a quicker and more effective method of destruction.⁸

With the ability of both sides to quickly destroy rail facilities and equipment, cavalry raids working behind established battle lines carried-out raids and wrecked havoc with logistics lines of communication. Consequently, the need for adequate protection from these attacks was soon realized. The risk simply became too great as campaigning armies operated far from established supply bases.

This requirement became particularly critical for Union forces operating in the South. For example, Confederate cavalry raids commanded by Forrest and Morgan in July and August 1862 were extremely effective against Union supply lines. With Buell's army advancing towards Chattanooga, Forrest's cavalry attacked the garrison at Murfreesboro. He captured the garrison and destroyed the railroad there before escaping through the Cumberland Mountains. Once the rail lines were repaired, Forrest's men returned and destroyed three bridges near Nashville. This had the effect of delaying Buell's advance by two weeks.⁹

Again, Buell's move towards Chattanooga was delayed when, raiding through Kentucky and middle Tennessee, Morgan's

cavalry forces captured 1,200 prisoners and captured tons of supplies at the cost of only ninety Confederate troops. In a follow-on raid, Morgan's forces attacked the railroad north of Chattanooga, blocking the rail line by collapsing an 800-foot tunnel, thus cutting off the advancing Union army from its main supply base in Louisville.¹⁰

Raids such as these illustrated the advantage enjoyed by Confederate forces fighting on the defensive in their own territory, and consequently, the difficulty they posed to campaigning Union armies in Southern territories:

"With 2,500 men Forrest and Morgan had immobilized an invading army of forty thousand. Living off the friendly countryside and fading into the hills like guerrillas, rebel horsemen could strike at times and places of their own choosing. To defend all the bridges, tunnels, and depots along hundreds of miles of railroad was virtually impossible, for guerrillas and cavalry could carry out hit-and-run raids against isolated garrisons or undefended stretches almost with impunity."¹¹

By 1862, Union dependency on railroads was complete. So was the frustration felt by Northern military commanders at the vulnerability of their logistic life line. Having to devote large numbers of troops to protect rail lines impeded mobility, drained the front lines of fighting power, and as noted above, was often ineffective. This frustration prompted Sherman in that year to make the following comment:

"'Railroads are the weakest things in war,' declared Sherman; 'a single man with a match can destroy and cut off communications.' Although 'our armies pass across and through the land, the war closes in behind and leaves the same enemy behind,' Sherman continued. It was the fate of any; 'railroad running through a country where every house is a nest of secret, bitter enemies' to suffer 'bridges and water-tanks burned, trains fired

into, track torn up and engines run off and badly damaged." ¹²

Thus, railroads shaped the North's campaign planning and operations. They were considered a blessing for the sheer quantities of men, equipment and supplies they could transport. But they were also considered a burden for the huge amount of resources necessary to protect and rebuild these vital life lines. With limited resources, Confederate guerilla-type raids could easily delay, or even prevent, carefully planned Union operations. However, geography, doctrine and the need to support large mass armies in the field allowed for no alternate mode of transport. The iron horse remained the centerpiece.

CHAPTER III

THE CAMPAIGN FOR VICKSBURG

Strategic Importance.

The task of clearing Confederate resistance on the Mississippi River was assigned to Grant in October 1862. Vicksburg, the last stronghold on the Mississippi, had become the focus of Union concern after the naval campaign led by Admiral Farrugut in April of that year had secured the river, except for a 250-mile stretch between Vicksburg and Port Hudson, Louisiana. However, with Vicksburg in Confederate hands, Southern forces from the high bluffs above the river could effectively control passage on the Mississippi.

Opening the lower Mississippi was now of vital concern to the Union. Complete control of the river would allow uninterrupted passage of commercial shipping and access to markets for Northern agriculture and industrial products in New Orleans and beyond. Furthermore, the many navigable streams tributary to the Mississippi afforded routes of transportation for troops, supplies and other war materials deep into Southern territory. This would give the Union the ability to both strike into the "heart of Dixie," and cut the Confederacy off from Texas, Arkansas, and most of Louisiana; an area representing approximately half its land territory.¹

A Plan Gone Wrong.

Because of Vicksburg's commanding position high on the bluffs overlooking the Mississippi, and the fortifications the Confederates had built there, Grant opted for a land-based expedition. His plan was to approach Vicksburg along the rail line through Grand Junction, Holly Springs, Oxford and Grenada.² He hoped to tie up the bulk of Pemberton's Confederate forces, tasked with defending the Vicksburg area, while Sherman, with a force of 32,000 men aboard 60 transports, proceeded down-river to strike at Chickasaw Bayou, a low area a few miles north of the city where it was thought Union forces could gain a foothold.³

Up to the commencement of the campaign, Grant's troops had been primarily occupied with defending rail lines to his base of operations in Memphis. This was at a tremendous cost in resources. But he felt that by going on the offensive in the Southern countryside, thus pushing the enemy onto the defensive and driving them back into their own territory, defense of the rail lines would take care of itself. Since it would be necessary for the Confederates to commit all available forces to stemming the Union advance, a large force could be freed-up from protection of the railways for action in the field.⁴

In November, Grant pushed 40,000 troops south from Tennessee along the Mississippi Central Railroad to Holly Springs where he established a forward supply base. All the

munitions and supplies stored there, except for a small amount captured during the advance, had been brought in by rail from Columbus, Kentucky. Grant, in his memoirs, remarked: "This was a long line (increasing in length as we moved south) to maintain in an enemy's country."⁵ By December, they had advanced to Oxford, and Sherman's forces on the twentieth of that month, were now on their way down river.

However, Grant's first campaign for Vicksburg was to go wrong. He had miscalculated the effect of his advance on the enemy. On 20 December, Van Dorn, slipping behind the advancing Union lines with a Confederate cavalry force of 3,500, destroyed both the poorly-defended supply depot at Holly Springs and the rail lines in the surrounding area. At the same time, Forrest, with a force of 2,000 and guerrillas he picked-up along the way, had ridden westward from central Tennessee and wrecked havoc on Grant's Mobile & Ohio Railroad supply line. Deep in enemy territory, and cut off from his source of sustainment, Grant was forced to call off the operation.⁶

During the Union Army's retreat to Tennessee, Grant was to learn a lesson that would prove key not only his success against Vicksburg, but also Sherman's "March to the Sea" from Atlanta to Savannah:

"I was amazed at the quantity of supplies the country afforded. It showed that we could have subsisted off the country for two months instead of two weeks without going beyond the limits designated. This taught me a lesson which was taken advantage of later in the campaign when our army lived twenty days with the issue of only five

days' rations by the commissary. Our loss of supplies was great at Holly Springs, but it was more than compensated for by those taken from the country and by the lesson taught."⁷

Vicksburg is Captured.

In late April 1863, after several intricate attempts to get Union forces into position to assault Vicksburg, all of which had failed, he was eventually able to get his troops into position some sixty miles south of the city by using the Louisiana bayous, out of reach of Confederate artillery. Crossing the Mississippi River at Hard Times and landing at Bruinsburg, he moved inland towards Jackson. Successfully engaging the enemy at Port Gibson and Raymond, Union forces moved on to capture Jackson. Then moving westward towards Vicksburg, Grant's army met and defeated Confederate forces first at Champion Hill, and then at the Black River Bridge. After reaching Vicksburg on 18 May, several unsuccessful assaults on the city were made. The Confederate's staunch defensive fortifications and increasing Union losses led to Grant's decision to take the city under siege. After thirty-nine days, faced with dwindling supplies and no chance for help from the outside, Pemberton surrendered.⁸

Grant's success can be attributed largely to his decision to abandon traditional resupply methods, the hard lesson from his first Vicksburg campaign. Realizing the ability of his army to live off the land, it freed his forces from reliance on a long logistics line of communication. This provided two major advantages. First, it freed-up manpower since none

would be required to protect it, and second, it allowed the ability to maneuver because advancing forces were not confined to transportation routes necessary for vehicle passage.⁹

Thus, without the need to follow the axiom of war that required supply bases with commensurate protection, Grant was able to achieve his objective.

CHAPTER IV

ANALYSIS AND RELEVANCE FOR TODAY

Analysis.

This analysis focuses on Grant's first Vicksburg campaign because the implications for today's logistics transportation technology evolve from the context in which the campaign was planned, and the paradigms held by military commanders of the day. More specifically, the dependence on rail transportation as an integral part of supply and sustainment, and the mindset that protection of vital logistics lines would somehow "take care of themselves," hold vital lessons for today's operational planners.

First, it's clear that a dependence on rail transport by Union forces for movement of troops, supplies and other war materials developed early-on in the war. In the forefront of the technology of the day, no other real alternative existed. Able to meet the geographic requirements encountered by Civil War armies, railroads could move large quantities of war materials over long distances in relatively short periods of time. It would allow for the establishment of forward supply bases from which advancing armies could resupply and sustain forward maneuvers. For Grant, it was perfectly logical to plan his initial Vicksburg campaign using what rail resources were available to his advancing army.

Next, railroads were extremely vulnerable to enemy attack. As discussed, a "war of the rails" developed in which both Union and Confederate sides tried to outdo one another. Cavalry attacks using equipment specially developed to destroy rail lines, sped up the destruction process making these raids even more devastating.

Grant's misunderstanding of the nature of the war on which he was about to embark, and his miscalculation of his enemy's capabilities, led directly to the failure of his first Vicksburg campaign. Although acknowledging a need to protect his rail lines, he believed that his advancing army, although deep in enemy territory among a hostile civilian populace, would force the enemy to concentrate all its available forces on the defense of their territory. This would in turn free-up Union troops from the need to protect not only his rail links but his forward supply base at Holly Springs. Unfortunately, Van Dorn and Forrest saw the situation differently. Their raids against Holly Springs and the Mobile & Ohio Railroad brought an abrupt end to Grant's initial campaign.

Lastly, Union logistics doctrine prescribed the procedure for supporting a campaigning army. Advanced supply bases, usually near rail facilities, would be established. From these bases, advancing troops were to be supplied. As logistics lines grew, so too did the requirement to protect them.

Logistics doctrine became a paradigm. Grant's great lesson that his forces could live off the land only became apparent to him while his forces were in retreat. The failure to consider alternatives to established doctrine in his campaign planning provided a costly lesson in terms of men and material.

Thus, the lessons gained from this analysis are just as valid for today's operational planners as they were in Grant's time. Logistics transportation, using the most efficient and practical mode of transport, is vital to successful campaign prosecution. War materials must be brought-in in sufficient quantities, and when needed, to effectively sustain advancing forces in the field. However, the cost in resources to protect these vital lines of communication, and the implications of not providing adequate security, cannot be overlooked. Protection of air and sea transport should be of highest priority, and an integral part of the planning process. Finally, given an honest appraisal of an enemy's capability, and thus an understanding of the nature of the conflict, the best alternative logistics support package must be developed, one that minimizes the risk of disruption of logistics lines, and provides the best opportunity for success.

Today's Threat.

The post-Cold War era has led to significant changes on the world scene. No longer a bipolar world where sovereign

nations are divided along ideological lines based on democracy or communism as represented by the United States or the Soviet Union, the threat of nuclear annihilation has subsided. In its place is a more complex world where, without the overriding superpower rivalry, nations are now free to pursue their own national agendas. Gone are the communist revolutionary influences fostered by Castro's Cuba, the Soviet Union, and even the Peoples Republic of China.

However, with the diminished superpower threat comes other threats that could prove just as dangerous. Fervent nationalism is on the rise in the former Soviet Union (FSU). Nations once part of the Warsaw Pact are experiencing similar disruption. Border disputes and ethnic issues has given rise to violent conflict in places such as the Balkans. Total disintegration of a country's government and infrastructure, as witnessed in Somalia, has also spurred armed conflict. Although the threat of superpower conflict has abated, the world remains a dangerous place; a place in which American military forces are surely to become engaged.

Coupled with these kinds of threats is the worldwide proliferation of weapon systems. Although not necessarily state-of-the art, many weapon systems on today's market are still, nonetheless, very effective when employed in an environment conducive to their use. Surface-to-Air (SAM) missile systems, seaborne mines, submarines and others, represent just some of the tools of the trade.

Thus, the threat today is multifaceted. Potential adversaries such as North Korea, Iran and Iraq pose a serious threat. Further, involvement in LIC, peacekeeping operations, humanitarian assistance and national assistance are other situations in which U.S. forces are likely to become engaged. In all cases, potential adversaries may not only garner conventional forces, but most surely will exploit the advantages available through the use of non-conventional warfare and the availability of weapons technology on the world markets.

Logistics Transportation Implications.

What are the operational implications of the new threat environment to logistics transportation resources? With weapons proliferation and the potency of guerilla warfare, transportation assets become prime targets of opportunity. Ships and aircraft operating in and around a theater of operations can fall prey to a myriad of covertly employed anti-ship or anti-air weaponry. Thus, protection of these transportation resources must figure heavily in operational planning.

Sealift and Airlift.

With a downsized United States military with the bulk of its ground and air forces operating from bases located in the U.S., sealift and airlift take on even greater importance. The need for transportation resources has been recognized. A fast-sealift capability has been developed. Further, war

materials pre-positioned aboard ships enable fast deployment of war resources to sustain troops in-theater. Lastly, airlift, always an integral part of the logistics deployment picture, serves as not only the quickest means of transport, but also complements the sealift component. Thus, just as in Grant's day, a dependence out of necessity exists on our transportation technology.

Although addressed by military doctrine, protection of these vital assets has taken on an attitude of "It will take care of itself," or "We'll cross that bridge when we come to it." Clearly, protection must be addressed up-front. For example, mine warfare poses a serious threat. Additionally, Third World acquisition of diesel powered submarines also has the potential of seriously affecting naval mobility. Finally, shoulder-launched Stinger SAM missile systems constitutes serious threat to airlift assets. Thus, as logistics lift ability becomes increasingly vulnerable with weapons proliferation, the level of risk rises dramatically. Therefore, to assure success, operational planners must seriously consider the security requirements of their sea and air support.

Finally, with an understanding of the threat to these resources in a given operational scenario, plans should consider the limitations placed on the existing transportation system and be developed accordingly. If, for example, mine warfare by an adversary is a known likelihood, alternatives

must be developed that lessen the vulnerability of available transport assets. If application of anti-mine warfare resources is not available in sufficiency to render the threat-risk acceptable, the use of alternate debarkation ports or the exclusive use of airlift for logistical support may prove viable options.

CHAPTER V

CONCLUSION

The Civil War era provides many insights for today's operational planners. In particular, Grant's first Vicksburg campaign provides a timely lesson concerning logistics transportation. First, it is crucial that logistics transport assets be considered vital to operational success. The loss of rail resupply ended Grant's first Vicksburg operation.

Further, a realistic appraisal of the enemy's capabilities and the spectrum of threats likely to be encountered must be applied to transport assets. Grant failed to consider the capability of Confederate forces to conduct cavalry raids against his rail lines. Today, threats of this type are represented by covertly operated weapon systems. Both sealift and airlift resources should be considered prime targets of opportunity due to their impact on theater force sustainment. Thus, protection of these assets must be afforded protection commensurate with a realistic appraisal of the likely threats.

Lastly, the risk associated with each logistics transportation course of action should be weighed, and the alternative providing the best possibility of success should be accepted. Grant was unable to see logistics alternatives until he realized during retreat that the countryside afforded a means to support his troops.

Campaign success depends on many complex interactions and comprehensive planning is the first step. As the spectrum of threat to transportation resources grows with worldwide weapons proliferation, and the nature of war evolves with the changing political climate, employment and protection of these vital assets must become a primary concern in the planning process. Without logistics sustainment, the likelihood of operational success becomes in doubt.

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