END OF WORLD WAR II
1945-1995

V
FOR VICTORY

COMMEMORATIVE COLLECTION

REFERENCE
MANUAL

THREE-SIXTY

V FOR VICTORY™

Commemorative Collection

Gold Juno Sword - Normandy, France, 1944
Market–Garden - Holland, 1944
Velikiye Luki - Russia, 1942–43
Utah Beach - Normandy, France, 1944

Reference Manual

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Commemorative Collection™ Reference Manual

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Terrain

Game Scale and Map

Each hexagon on the Commemorative Collection™ game maps represent an area of one square kilometer (0.62 x 0.62 miles). Each game–turn represents four hours of real time.

The Commemorative Collection™ game maps represent the actual terrain upon which the various battles were fought. Each map was based upon either contemporary large-scale (e.g., 1:250,000) topographic maps, or the maps found in the official U.S. Army histories.

An explanation of each terrain type in the game is given below, along with a discussion of its real and game effects. Note that, in some situations, it is possible for the effects of more than one terrain type to apply. For example, an attack made across a river and into forest suffers the attack penalties associated with both terrain types.

Clear Terrain

This is open and relatively flat farmland and fields, with a few scattered trees and small buildings. Compared to the polders, clear terrain is higher, firmer ground which is relatively dry for most of the year.

Clear terrain is the best type of terrain for an attacker. The long, open fields of fire and lack of cover combine to make it a generally poor location for a defensive line, although in some places the defender doesn't have much choice if that's where his units are or need to be. Clear terrain is considered ideal "tank country."

In the game, units defending in clear terrain do not receive any of the favorable combat modifiers that go to defenders in the other terrain types, and clear terrain normally does not cause any penalties to units attacking into or out of it.

In Velikiye Luki, however, clear terrain includes both higher, firmer ground which is relatively dry for most of the year, and large areas of lower–lying marsh and grassy swamp which freeze over in winter. Much of the clear terrain shown on the Velikiye Luki map is actually swamp during summer, when it is very wet and nearly impassable, especially along the streams and rivers. When the game begins in mid–November, some snow has already fallen and average temperatures are already at or below freezing, so the ground has started to firm up, and continues to do so as winter progresses. Additionally, during deep snow conditions, all units except ski, armor and artillery have their attack strengths **halved** when attacking out of a clear terrain hex. This is due to a loss of mobility caused by deep snow and snow drifts. (See "Weather.")

Beach
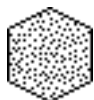
This is similar to clear terrain in that it is generally flat and open with little cover, but the dunes, sand, and mud make it harder for most wheeled vehicles to move around in. Unlike other terrain types, the width of a beach varies with the tide, and so only briefly, at low tide, is the area represented by a beach hex a full kilometer across. Most of the time it is considerably narrower than that, and thus the maximum number of units that can be located in a beach hex (the stacking limit) is less than for other terrain types. This lower stacking limit hinders multi–unit attacks made from beach hexes.

Artillery fire into beach hexes is halved (because the dunes offer some protection, and the sand dissipates the blast), and units attacking into a beach hex have their final combat odds reduced by one (a slight reduction). Defensively, a beach hex makes a good anchor for a defensive line, if it is secure from the landward side.

Invasion Beach
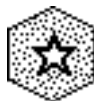
Invasion beach terrain only appears in the Utah Beach and Gold Juno Sword games. There are several invasion beach hexes, all having the same movement and combat effects as regular beach hexes. However,

these beaches were considerably more than just sand and surf: the Allies very quickly turned this stretch of coastline into a complete artificial port, almost like a major coastal city without the buildings. Extensive facilities, manpower, and equipment were located there, and special arrangements were made to rapidly process as many men and as much equipment as possible through these hexes. Therefore, invasion beach hexes have a higher stacking limit than the regular beach hexes.

Swamp

A typical swamp hex represents open grassland inundated by two to four feet of standing water. Also classified as swamp are some tidal mud flats near the various river mouths. Infantry could get through either (with difficulty), but vehicles could not. The roads through these areas were already on raised causeways, and so swamp does not affect movement along roads.

Artillery fire into swamp hexes is halved (the water absorbs much of the blast); armored and motorized units attacking **into** a swamp hex have their attack and armor strengths halved (because they cannot enter the hex except along a road); and **all** units attacking **into** a swamp hex have their final combat odds reduced by one (a slight reduction).

In addition, **all** units attacking **out of** a swamp hex have their attack and armor strengths halved. For infantry on foot, this is because of the difficulties of moving, setting up, and operating the heavy weapons that constitute most of the unit's firepower; for armored and motorized units, which cannot be in a swamp hex unless it also contains a road, it is because they are confined into a narrow column and are unable to maneuver.

Due to the scarcity of places to sit or lay down comfortably in a swamp hex, units that end the turn in a non–road swamp hex have their fatigue increased by one.

Finally, units in swamp hexes may not "dig in", and construction of a fortification there takes twice as long as normal (i.e., eight turns instead of four).

Bocage

This is the infamous Normandy "hedgerows", a type of man–made terrain unique to this part of France. Bocage consists of innumerable small, sunken fields, each surrounded by a wall of rocks, earth, and dense vegetation from three to six feet high. This type of terrain came about because the soil of Normandy is naturally rocky, and farmers here worked the same fields for over a thousand years. Gradually, over many generations, they moved most of the rocks to the edges of the fields, either to build stone fences or just to get them out of the way. Over the centuries, these rock boundaries between the fields became overgrown with trees and other vegetation, thus forming a maze–like gridwork of excellent defensive positions.

Artillery fire into bocage hexes is halved because of the good cover offered by the wall–like hedges, and also because the short lines of sight made it very difficult to properly observe and adjust artillery fire. Units defending in bocage have their antitank strengths doubled. Units attacking a bocage hex have their final combat odds reduced by two (a moderate reduction).

Polder

Polder only appears in Market-Garden. It is land that has been reclaimed from the sea or from the tidal estuaries of major rivers. This type of terrain represents farm and pasture land which the Dutch people have reclaimed by building dikes to contain the major rivers in the area. It is very similar to clear terrain with the exception that, underneath a thin layer of topsoil, the ground is still completely saturated and very soft.

Due to its soft and wet nature, motorized and armored units may only enter polder by moving along continuous road hexes. For the same reason, the attack and armor strengths of motorized and armored units are halved when they attack into or out of a polder hex.

Forest
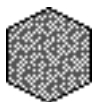
This is forested terrain and usually coincides with the higher terrain on the map. These areas are broken with slopes and rocks and are generally unsuitable for agriculture.

In Velikiye Luki, forested terrain actually represents forested swamp over most of the map area, and is very wet and difficult to move through in summer. The going is a little easier in winter when the ground is frozen. The larger expanses of forest were in fact unexplored wilderness, completely untouched by man: primeval, trackless, and totally uninhabited. The trees are mostly birch and conifer, and the undergrowth is dense.

Forest is very good defensive terrain: artillery fire into forest hexes is halved, the defender's antitank strength is multiplied by 2.5, and units attacking a forest hex have their final combat odds reduced by three (a large reduction).

Village

Most of the village hexes on the map represent rural settlements of 50 to 100 small buildings and houses, primarily of wooden construction, and separated from each other by pastures, gardens, and small fields.

In Velikiye Luki, the town of Novosokolniki is somewhat larger, and is shown on the map as a multi–hex village. It had a total pre–war population of slightly less than 9,000.

Villages make good defensive terrain: artillery fire into them is halved because of the cover provided by the buildings, the defender's antitank strength is multiplied by 1.5, and units attacking a village have their final combat odds reduced by two (a moderate reduction).

City

This is a fully urban environment, with paved streets and densely packed, multi–story buildings. Because of the abundance of excellent cover as well as the limited observation and fields of fire, more men are required to hold or take a given–sized area in a city than in more open terrain. For that reason, the stacking limit is higher in city hexes.

Cities make very good defensive terrain: artillery fire into city hexes is halved; the defender's antitank strength is doubled, and units attacking a city hex have their final combat odds reduced by three (a large reduction).

Bunkers

This represents permanent fortifications consisting of concrete bunkers and pillboxes, plus barbed wire, minefields, tank traps, roadblocks, etc. In Market–Garden these also include static flak emplacements and other fortified defenses near the important bridges.

Bunkers are excellent defensive terrain; artillery fire into bunker hexes is quartered; units defending in them have their antitank strengths doubled, their defense strengths multiplied by 2.5, and ignore all retreat results; and units attacking a bunker hex have their final combat odds reduced by three (a large reduction).

Beach Bunkers
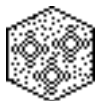
Beach bunkers only appear in Utah Beach. They are identical to regular bunkers except that they are located in what would otherwise be a beach hex. Therefore, they have the same lower stacking limits and slightly higher movement costs for wheeled vehicles as regular beach hexes. They have the same combat effects as regular bunkers.

Fortress

Fortress terrain appears in Velikiye Luki and Utah Beach. It represents a single very large castle or bunker–type structure, with very thick walls of rock and concrete. In Velikiye Luki the Germans selected several of the largest and strongest buildings, heavily reinforced them, and essentially converted them into large bunkers. Also included as a fortress is the old town citadel, a true medieval fortress. (The citadel is located just west of the river, in the hex bounded by the river on four sides.) In Utah Beach several fortresses are located in and around Cherbourg. Some of them were old structures located on top of and within the cliffs overlooking the city, and others, constructed by the Germans during the war, were underground bunker complexes.

Fortresses are the best defensive terrain in the game: artillery fire into fortress hexes is quartered; units defending in them have their defense and antitank strengths tripled and ignore all retreat results, and units attacking a fortress hex have their final combat odds reduced by three (a large reduction).

Secondary Roads

These are the most important of the dirt roads, which are mostly two lanes wide, with minor improvements such as raised roadbeds and culverts. They provide for better mobility than moving cross–county.

Primary Roads
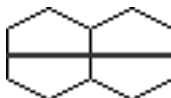
These are two lane paved highways; motorized units can move along them very rapidly.

Railroads
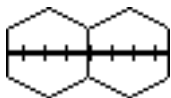
For a number of reasons railroads are only represented in the Velikiye Luki scenario. The north–south railroad through Novosokolniki was the main Vitebsk–Leningrad line, vital to the supply of the German Army Group North. This rail line was in fact the primary Russian objective in the battle; the city of Velikiye Luki was of lesser importance, but had to be taken first.

For much of the year and throughout most of Russia, railroads doubled as highways, facilitating movement for units of all types. Movement of ordinary units along a rail line, even trucks and horse drawn units, was often faster and easier than on the wretched roads, especially in swampy areas and during the muddy seasons. This was because the railroad beds were more likely to be dry and firm, due to their raised, graded, and/or drained roadbeds. Unlike the roads, most railroad beds had to be improved in this manner when the railroads were first constructed, in order to keep the rails straight and level, and to support the weight of the trains.

Movement of units by train is not represented in the game, due to the fact that movement by train was not a normal or practical procedure for short, tactical movements near the front line. In addition, all the reinforcements received by both sides during the battle entered the map via normal movement; those that did arrive in the general area by train all disembarked before they entered the map, or at least very near the map edge.

In Utah Beach the railroads were left out because neither side was able to use them to any significant extent during the time period covered by the game. Allied airpower made German use of the railroads in Normandy a complete impossibility (and it wasn't much better throughout the rest of France). For their part, the Allies didn't need and didn't make much use of the French rail net until after their breakout from Normandy.

Streams
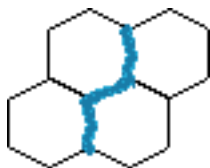
These are small water obstacles, a few feet deep and a few tens of feet wide. In this area they tend to have either steep or very swampy banks, but are already beginning to freeze over when the game begins. Therefore, they have only a minor effect on movement, and no effect on combat.

Note that in the Velikiye Luki scenario, during deep snow ground conditions, steams cease to have any effect on movement, and therefore appear on the map in a lighter and less visible form. (See "Weather.")

Rivers and Canals
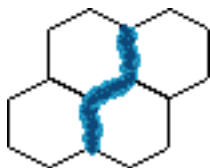
These are moderate–sized water obstacles, four to six feet deep and thirty to eighty feet wide. Infantry can either ford them or swim across, but vehicles, artillery, and HQ units can only cross at a bridge.

Rivers make excellent defensive boundaries: non–artillery units attacking across rivers do so at half strength (one–quarter for armored or motorized units), and the armor strength of armored and recon units attacking across rivers is halved at road hex-sides and quartered at non–road hexsides.

In Velikiye Luki, the Lovat River is already frozen when the game begins in mid–November, and will support the weight of men on foot and *perhaps* cavalry horses, but deeper cold is required before the ice will support the weight of draft horses, vehicles, or heavy equipment. In summer, most of the hexes adjacent to the Lovat are very swampy and essentially impassable, especially north of Velikiye Luki. Note that during hard freeze ground conditions, rivers become much easier to cross (for all units), and lose their effect on combat entirely. This is indicated graphically

on the map by a lighter–colored river symbol. During deep snow conditions, rivers lose their movement effects also, and therefore disappear from the map completely. (See "Weather.")

Major Rivers
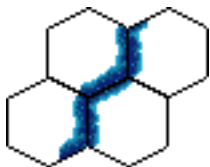
These are significant water obstacles, impassable for all units except at a bridge or when being ferried by engineers.

Lakes

This terrain type only appears in Velikiye Luki. It represents a large lake which is many hundreds of yards or even a full kilometer across; smaller lakes are shown as discontinuous rivers, and have the same effects as rivers.

When the game begins in mid–November, the prevailing light freeze conditions are not sufficient to create a safe thickness of ice in the centers of these large bodies of water. Therefore, whole–hex lakes are impassable terrain for all units until hard freeze occurs.

During hard freeze, all units may enter lake hexes, although it is slightly more difficult for horse drawn and motorized units. This is indicated on the map by a lighter–colored lake symbol. Also, all non–artillery units which attack out of a lake hex during hard freeze have their attack strengths halved, due to the absolute lack of cover and concealment on the ice. During deep snow, lakes become indistinguishable from normal clear terrain, and therefore disappear from the map entirely. (See "Weather.")

Ocean
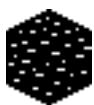
This is an all–sea hex and cannot be entered by any units.

Hills
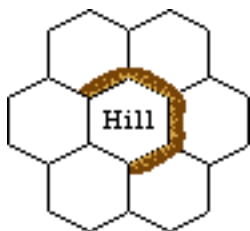
Hills are depicted by one or more hill hexsides, each of which represents a distinct elevation difference of approximately 100 feet between two adjacent hexes, across the hexside where the hill symbol is located. The hill symbol is located within the hex that constitutes the "down" side of the slope; the hex *adjacent* to the hill symbol constitutes the "up" side.

All non–artillery units attacking uphill have their attack strengths reduced by 25 percent. All armored units attacking uphill have their armor strengths reduced by 25 percent. All non–artillery units attacking downhill have their attack strengths increased by 25 percent. All armored units attacking downhill have their armor strengths increased by 25 percent.

In addition to their combat effects, movement for all units is slightly more difficult when going "uphill" across a hill hexside. There is no movement cost or benefit for going "downhill."

Dikes
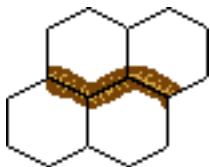
These represent large earthen walls which are up to 100 feet tall and can be miles long. They are shown as two hill hexsides placed back to back. Dikes have the same effect on movement and combat as hills, except that they are "uphill" from both directions.

Bridges

In Market–Garden, there are two kinds of bridges, infantry and tank. A bridge exists in every location where a road crosses a river or a major river. If the road is a secondary road, the bridge is a infantry bridge, and only non–motorized units may cross it. If the road is a primary road, the bridge is a tank bridge, which any unit may cross. Both types of bridges may be captured, destroyed, and repaired. Because most of the bridges are only one lane wide, crossing them costs slightly more movement points than moving along the road in a non–bridge hex. For more information on bridges, see the section on "Bridges, Engineers, and Ferrying" below.

In Utah Beach bridges are handled somewhat differently. Most of the bridges in the Utah area were very massive and solidly–built causeway–type structures, made of earth and stone, and more like small dams than bridges. They were very difficult to demolish completely, and when damaged, were fairly easy to render serviceable again. In this part of Normandy at least, "blowing a bridge" was much easier said than done. Therefore, in Utah Beach all bridges are assumed to be permanent, and players may not destroy them. Railroad *bridges* might have been a different matter, as they could also be used by troops, trucks, and tanks. However, within the Utah Beach map area there were only a handful of railroad bridges that crossed significant obstacles (rivers and swamps), and each of these railroad bridges or causeways just happened to be adjacent to a major *road* bridge or causeway. Therefore, the addition of separate railroad bridges and causeways would have had little or no effect.

In GOLD • JUNO • SWORD, both the Allies and the Germans were reluctant to blow bridges because both sides wanted them intact for their own reasons. Therefore, in GOLD • JUNO • SWORD all bridges are assumed to be permanent, and players may not destroy them. For more information on river crossings , see the section on " Engineers and Ferrying" below.

Ferries

In Market–Garden, beside bridges, another type of river crossing is ferries. These ferries represent the German–controlled boat transportation of units across major rivers. All German units may use ferries, but for all units the movement cost of crossing a river on a ferry is significantly greater than a bridge. Unlike bridges, ferries cannot be captured, and can never be used by Allied units. For more information on ferries, see the section on "Bridges, Engineers, and Ferrying" below.

Units - General Information

In Commemorative Collection™ games, most of the units on both sides represent battalions, but there are some smaller company–sized units as well. **Company–sized units are indicated by a diagonal slash in their lower right corner.** Full–strength infantry battalions contain from 600 to 1000 men each (companies 100 to 200); armor battalions contain 30 to 40 tanks each (companies 10 to 15); and antitank, anti–aircraft, and artillery battalions contain 6 to 24 guns (companies, also known as batteries, 4 to 8 gun each). Each headquarters unit represents *several* battalions of non–combat support troops (such as signals, medical, quartermaster, supply, etc.), containing approximately 1,000 men for each point of defense strength possessed by the HQ unit.

Unit Colors

On color monitors, non–airborne British units are brown, American airborne and glider units are tan, British airborne and glider units are red, Polish units are dark red, Russian Guards units are red, Russian ski units are red on white, and all other Russian units are brown. German Army units are gray, German ski units are black on white, Luftwaffe units are blue, Kriegsmarine (German navy) units are blue-green and Waffen–SS units are black.

On black and white monitors, all Allied units (including Russians) are white and all German units are half black and half white, except Waffen–SS units, which are black.

Unit Symbols and Designations

There are two different styles of symbols that may appear on the units; you can choose which style you prefer. The default style consists of pictorial icons, in which a small silhouette of a soldier represents infantry, a tank silhouette represents armor, etc. The other style consists of the standard military symbols for infantry, armor, artillery, etc. that are used on real military documents and maps. To change from one style to the other, click on "Options" on the Menu Bar at the top of the screen, drag the cursor down to "Military

Symbols," and release. The Quick Reference Card included in the game box shows all the symbols and explains their meaning.

In addition to a symbol, each unit also bears its actual historical designation, often a number, but frequently letters in the case of British units. Numbers may be either divisional, regimental, or battalion numbers, depending on the unit and whether or not it is part of a regiment. HQ units carry the number of their division or brigade. If the lower left corner of a **non**–**HQ** unit contains one or more dots, the number on the unit is its **regimental** number, and the number of dots indicates the **battalion** (or sometimes company) number of the unit within the regiment. If a **non–HQ** unit does **not** contain any dots in its lower left corner, the number is its own battalion or company number, which occasionally was the same as the divisional number. Some examples are given below.

Typical American and British Unit Designations

Unit	Abbreviated Designation	Full Name
	1–32–Gds Arm	1st Battalion, 32nd Infantry Brigade, Guards Armored Division.
	3–506–101	3rd Battalion, 506th Parachute Regiment, 101st Airborne Division
	3–RTR–11	3rd Tank Battalion, Royal Tank Regiment, 11th Armored Division
	76–3	76th Field Artillery Regiment, 3rd Infantry Division
	30	Bridge Engineers, XXX Corps
	15th	Divisional Headquarters, 15th Infantry Division
	Polish	Brigade Headquarters, Polish Parachute Brigade
	1	1st Recon Company, 1st Airborne Division
	GA	Bridge Engineers, Guards Armored Division

	A/R–XXX	A Squadron, Royal Armored Car Regiment, XXX Corps
	1–8–04	1st Battalion, 8th Infantry Regiment, 4th Infantry Division
	3–12–04	3rd Battalion, 12th Infantry Regiment, 4th Infantry Division
	70–VII	70th Tank Battalion, VII Corps
	20–4	20th Field Artillery Battalion, 4th Infantry Division

Typical Russian Unit Designations

Unit	Abbreviated Designation	Full Name
	1–1193–360	1st Battalion, 1193rd Rifle Regiment, 360th Rifle Division
	3–1197–360	3rd Battalion, 1197th Rifle Regiment, 360th Rifle Division
	1–43	1st Tank Battalion, 43rd Mech Brigade
	1–21	1st Artillery Battalion, 21st Guards Rifle Division
	3rd Sh Ar	Engineer Brigade, 3rd Shock Army
	357th	Divisional Headquarters, 357th Rifle Division
	184th Tank	Brigade Headquarters, 184th Tank Brigade
	68–2nd Mech	68th Motorcycle Battalion, 2nd Mech Corps
	5th Gds Sh	Katyusha Regiment, 5th Guards Shock Corps
	257	Reconnaissance Company, 257th Rifle Division

Typical German Unit Designations

Unit	Abbreviated Designation	Full Name
	I–20–9	1st Battalion, 20th SS Panzergrenadier Rgt, 9th SS Panzer Division
	II–1222–180	2nd Battalion, 1222nd Infantry Regiment, 180th Infantry Division
	642	642nd Ost Battalion
	GRSN	1st Kompanie, Garrison Infantry
	1-107	1st Companie, 107th Assault Gun Battalion, 107th Panzer Brigade
	59	59th Reconnaissance Battalion, 59th Infantry Division
	I–FB	1st Artillery Battalion (SS), Flak Brigade
	10th	Divisional Headquarters, 10th SS Panzer Division
	3–22	3rd Companie, 22nd Flak Regiment
	ND	Nederland Battalion, Dutch SS

You may have noticed some differences in the above tables between Allied and German nomenclature with regard to battalions and other unit designations. The British used Roman numerals for Corps designations (groups of several divisions), but not for other unit designations. The Germans used Roman numerals to designate their corps, as well as battalions that were considered to be a permanent part of a regiment. *Independent* German battalions were designated with Arabic numerals just like German armies, divisions, and regiments. Numerous British and a few German units were designated with names (abbreviated on the units by letters) rather than numbers. Most American companies carried a letter–of–the–alphabet designation. With regards to the Russians did not use Roman numerals at all, Arabic numerals were used for all Russian units.

Units - Gold • Juno • Sword

"The English never yield, and though driven back and thrown into confusion, they always return to the fight, thirsting for vengeance as long as they have a breath of life." – Giovanni Mocenigo, 1588.

The Commonwealth Forces

Organization

During the time period covered by the game (June 1944), British units in the battle area were part of the 21st Army Group. Units of this Army Group had fought in France, North Africa, and Italy. Three corps out of the 21st Army Group participated in the Overlord Campaign : the I (1st), VIII (8th), and XXX (30th). Each of these corps contained a number of divisions and brigades, including infantry, armored, and airborne formations.

In addition to its divisions, the Allied order of battle also contained a number of independent brigades, regiments, and battalions of artillery, engineers, anti-tank, anti-aircraft and armor. These units were assigned to the corps level headquarters and then usually attached to divisions located in the most important sectors, or those involved in the heaviest fighting.

Except for airborne artillery, all British and Canadian artillery battalions (called regiments) had 24 guns each, twice as many as most American and German artillery battalions. On a division–for–division basis, this gave the British and Canadian Armies a substantial advantage in artillery firepower.

British armored divisions normally contained one motorized infantry brigade with three infantry battalions, one tank brigade with three tank battalions and one motorized infantry battalion, a mechanized reconnaissance battalion, an anti–tank battalion, an

anti–aircraft battalion, an engineer battalion, a bridge engineer company, a machine gun battalion, two self-propelled artillery battalions, and several rear-area units.

All of the Commonwealth infantry divisions were organized and equipped in the same way and contained the same quantities and types of subordinate units. Each infantry division consisted of three infantry regiments (each of three battalions), three artillery battalions, an engineer battalion, a reconnaissance battalion, a light anti-aircraft battalion, a machine-gun battalion, an anti-tank battalion, and several rear–area, non–combat battalions. In the game, all of the non–combat battalions have been combined into the divisional headquarters unit.

The British 6th Airborne Division contained two parachute brigades and one air landing brigade (each of three battalions), an engineer battalion, an anti–tank battalion, one artillery battalion (with only 12 guns each), two battalions of glider pilots, an armored reconnaissance battalion, and a parachute pathfinder (reconnaissance) company.

The Lack of Motorization

For the first month ashore in Normandy, the transport companies of the Commonwealth Forces were fully occupied with transporting and distributing supplies, and building up a rear–area infrastructure to support the huge Commonwealth expeditionary force. It was not until the end of July that enough transportation capability existed to begin motorizing the regular infantry divisions for combat purposes. Until then, when Commonwealth infantrymen advanced, they did so by walking or riding on tanks.

Assessment

Among the British Army's greatest strengths were the high standards of individual training which were found in all British units, and their large equipment allotments made possible by American lend-lease. Because of these factors, the British Army maintained and improved the overall quality of its divisions during the war, unlike the Germans, whose qualitative edge early in the war was constantly reduced.

Another strength was the quality of some of the British Army's weapons, particularly those that were supplied via lend–lease. Although many indigenous British weapons were not up to the standards of the German Army, especially British tanks, the huge quantities of American lend–lease equipment more than made up for this. The British 25–pounder artillery piece was a notable exception, and contributed greatly to the firepower of British divisions. In the air, by 1944 the British and Americans could even boast a qualitative edge over the Luftwaffe.

The Canadian units in GOLD • JUNO • SWORD have the same organization, and were of the same high quality as the British, except their leadership was less experienced. The Canadian Army's standardization with the British Army allowed them to cooperate to the fullest extent in all aspects of warfare and allowed them to operate as one force, known in general as The Commonwealth.

On the other side of the coin, one of the British Army's greatest weaknesses were the operational restrictions placed on its commanders in an effort to conserve manpower. After the staggering losses of World War I and lesser but still heavy losses in the early years of World War II, Mr. Churchill required his field commanders, for political reasons, to break off any attacks which had the potential of incurring unacceptable losses. These constraints, coupled with the British tendencies of detailed and cautious planning and of beginning offensive operations only after a massive buildup of supplies, has led some to conclude that the British Army was inflexible and ponderous. In the end they achieved victory in the most economical and logical fashion possible.

Taken as a whole, the British Officer Corps must also be considered a weakness. Most British Army officers obtained their rank because of their social status, rather than professional ability. General Montgomery himself, had little faith in his divisional and corps commanders. The British Officer Corps as a whole was never the equal of their German opponents or their American allies.

All things considered, the strongest British units in GOLD • JUNO • SWORD were the 7th, and 11th Armored Divisions. These were well–balanced formations, and with the exception of being a little lean in infantry, were a match for anything the Germans could put in front of them. The British tanks were not as effective as those of the Germans, but the British made up for this through sheer weight in numbers.

The Cromwell tank also had a large speed advantage over the German Mark IVs and Panther Tanks. The 7th had previous combat experience in North Africa, and Italy, while the 11th saw its first action in operation Epson near the end of the game.

There were also a number of above–average tank and reconnaissance units of brigade and battalion strength in the I, VIII and XXX Corps which saw action in the Commonwealth sector after D-Day. These were experienced and well–equipped units which generally performed welling their role as support units for the Commonwealth divisions.

There were six British infantry divisions and one Canadian infantry division which participated in the fighting covered by the game. These were of various quality, the 3rd Canadian Infantry and the 3rd British 0r "London" Infantry Division were the least experienced of them, the 49th, and 51st being average divisions and the 15th, 43rd, and 50th Divisions being above average in quality. All of them possessed massive artillery firepower due to their large artillery battalions and lavish corps attachments.

German Wehrmacht

"He who has not fought the Germans does not know war." – British military aphorism

Organization

The term "Wehrmacht" is all–inclusive and translates roughly as "armed forces". The Wehrmacht consisted of the German Army (or "Heer"), the German Air Force (or "Luftwaffe"), the German Navy (or "Kriegsmarine"), plus the Waffen–SS.

Most of the German units that fought on the ground in the GOLD • JUNO • SWORD area were part of the regular German Army, but the 16th Feld Division was part of the Luftwaffe. There are also a few independent Kriegsmarine batteries that were part of the German Navy. There were also five SS Panzer Divisions that fought in this area in June. The Waffen–SS was the para-military

arm of the Nazi party and for all practical purposes it formed a fourth major branch of the Wehrmacht.

 Regardless of their *official* affiliation, all German units located near the front lines usually served under the operational command and control of the Army. The Army's LXXXIV (84th) Korps was responsible for all front–line combat operations in the Normandy area west of the Orne River. The area to the east of the Orne was defended by the LXXXI (81st) Korps. These Korps boundaries also defined the boundary between the 7th Armee (LXXXIV Korps) and the 15th Armee (LXXXI Korps). As reinforcements arrived I SS, II SS, XLVII (47th), and LXXXII (84th) Korps come into play in the campaign game as well.

Assessment

 The best German units to fight in the GOLD • JUNO • SWORD area during the time period covered by the game were the Panzer Divisions. Present were the 2nd, 21st, 130th "Lehr", 1st SS, 2nd SS, 9th SS, 10th SS and 12th SS. These units were all well trained and, with the exception of the 12th SS, experienced formations. The best German infantry divisions in the area were (in order of appearance) the 346th, 276th, 277th, 271st, and the 272nd. These divisions were fully trained and equipped by 1944 standards.

 The least effective of the German divisions were the 16th "Feld", 711th and the 716th Infantry. By 1944 German standards, these static divisions were deficient in heavy weapons, training, and experience and were suitable for defensive operations only.

 The miscellaneous, independent regiments and battalions of the various Korps were a very mixed bag. These included the 7th, 8th and 9th Nebelwefer brigades, credited with holding other "burnt out" German formations together long after they would have normally been overrun, and other

various armored, artillery, anti-aircraft, anti-tank and infantry units.

At the bottom of the barrel for the Germans were the so–called "Ost" (eastern) battalions, which were composed of Russians and other non–Germans from eastern Europe. By 1944, large numbers of such men had been persuaded to put on a German uniform, and, although their combat value was very limited, at that stage of the war the Germans needed every soldier they could get and they knew it. On D–Day there were approximately 100 of these battalions in France – the equivalent of 10 full–strength divisions! They were organized as independent infantry battalions, most (but not quite all) of them bearing identification numbers between 400 and 800. Approximately half of the Ost battalions were retained under the direct command of the Korps and Army HQ's, and approximately half were parceled out to the divisions. Most of the German infantry divisions in France had at least one Ost battalion permanently assigned, and some had two. Each of these battalions had a small cadre of German officers and NCO's, but despite their cadres' best efforts, the rank–and–file in these units remained very poorly–trained and poorly–equipped. It came as no surprise to anyone that they performed very poorly in combat; most of the men in these units surrendered to the Americans or British at the earliest opportunity. These units were always intended for security duty only, not front–line combat. Their value lay in the fact that having them hold down the rear area released an equal number of Germans for front–line duty.

Units - Market Garden

The British 21st Army Group

Organization

During the time period covered by the game (September 1944), British units in the battle area were part of the 21st Army Group. Units of this Army Group had fought in North Africa, Italy, Normandy, and Belgium. Four corps out of the 21st Army Group participated in Operation Market–Garden: the XXX (30th), VIII (8th), XII (12th), and 1st Airborne. Each of these corps contained a number of divisions and brigades, all of which were fully motorized except for the airborne formations.

There were three types of British divisions which participated in Operation Market-Garden: infantry, armored, and airborne. There was also the 8th Tank Brigade, the 1st Polish Parachute Brigade, and two American airborne divisions.

In addition to its divisions and brigades, 21st Army Group and its four corps also contained a number of independent regiments and battalions of artillery, engineers, anti-tank, anti-aircraft and armor. These units were assigned to the corps level headquarters and then usually attached to divisions located in the most important sectors, or those involved in the heaviest fighting.

From the beginning of the 1944 campaign in France all regular British Army units were fully motorized. The British Army was the first in the world to achieve this, thus allowing them great tactical and operational mobility, although they never achieved a sufficiently flexible command structure to fully utilize this advantage. The British divisions which participated in Operation Market–Garden were of the highest quality in terms of training, and their equipment was as good as was available to the Allies due to lend-lease.
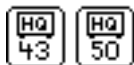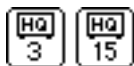
British infantry divisions contained three motorized infantry brigades, each with three infantry battalions, plus an artillery brigade with three artillery battalions, an anti–tank battalion, an engineer battalion, a bridge engineer company, a mechanized reconnaissance battalion, a machine gun battalion, an anti-aircraft battalion, and several rear-area, non-combat units. In the game, all the rear-area units are combined into the divisional headquarters unit.

Except for airborne artillery, all British artillery battalions (which the British called regiments) had 24 guns each, twice as many as most American and German artillery battalions. On a division–for–division basis, this gave the British Army a substantial advantage in artillery firepower.

British armored divisions normally contained one motorized infantry brigade with three infantry battalions, one tank brigade with three tank battalions and one motorized infantry battalion, a mechanized reconnaissance battalion, an anti–tank battalion, an anti–aircraft battalion, an engineer battalion, a bridge engineer company, a machine gun battalion, two self-propelled artillery battalions, and several rear-area units. The Guards Armored Division was somewhat larger, with several extra battalions of tanks, mechanized recon, and antitank guns.

The British 1st Airborne Division contained two parachute brigades and one airlanding brigade (each of three battalions), an engineer battalion, an anti–tank battalion, three artillery battalions (with only 12 guns each), two battalions of glider pilots, a company of armored jeeps, and a parachute pathfinder (reconnaissance) company.

The two American airborne divisions which participated in this battle each had three parachute regiments and one glider regiment (each with three battalions), an anti–tank battalion, an anti–aircraft battalion, an engineer battalion, three artillery battalions, and a reconnaissance company.

The 1st Polish Parachute Brigade contained three parachute battalions, an artillery company, and an anti–tank company.

The 8th Independent Tank Brigade contained three tank battalions and one motorized infantry battalion.

21st Army Group also contained numerous independent battalions of infantry, tanks, anti–tank guns, artillery, mechanized reconnaissance and armored cars, which were attached to various divisions in the Army Group.

Assessment

Among the British Army's greatest strengths were the high standards of individual training which were found in all British units, and their large equipment allotments, many of which were made possible by American lend-lease. Because of these factors, the British Army maintained, if not improved, the overall quality of its divisions during the war, unlike the Germans, whose qualitative edge early in the war was constantly reduced.

Another strength was the quality of some of the British Army's weapons, particularly those that were supplied via lend–lease. Although many indigenous British weapons were not up to the standards of the German Army, especially British tanks, the huge quantities of American lend–lease equipment more than made up for this. The British 25–pounder artillery piece was a notable exception, and contributed greatly to the firepower of British divisions. In the air, by 1944 the British and Americans could even boast a qualitative edge over the Luftwaffe.

The American and Polish units in Market–Garden were of the same high quality as the British, except their leadership was more aggressive.

On the other side of the coin, one of the British Army's greatest weaknesses were the operational restrictions placed on its commanders in an effort to conserve manpower. After the staggering losses of World War I and lesser but still heavy losses in the early years of World War II, Mr. Churchill required his field commanders, for political reasons, to break off any attacks which had the potential of incurring unacceptable losses. These constraints, coupled with the British tendencies of overly detailed, cautious planning and of beginning offensive operations only after a massive buildup of supplies, has led many to conclude that the British Army was inflexible and ponderous.

Taken as a whole, the British Officer Corps must also be considered a weakness. Most British Army officers obtained their

rank because of their social status, rather than professional ability. As the war went on, this became less prevalent in the junior grades, and individual exceptions can always be cited. However, the British Officer Corps as a whole was never the professional equal of their German opponents or their American allies.

All things considered, the strongest British units in Operation Market–Garden were the 7th, 11th, and Guards Armored divisions. These were well–balanced formations, and with the exception of being a little lean in infantry, were a match for anything the Germans could put in front of them. The British tanks were inferior to those of the Germans, but the British made up for this through sheer weight in numbers. All three of these divisions had previous combat experience in North Africa, Italy, and Normandy.

The British 1st Airborne Division, the American 82nd and 101st Airborne Divisions, and the Polish 1st Parachute Brigade were highly trained, elite formations, but did not possess the heavy–weapons firepower of other units because of the requirements of being air–transportable. Otherwise, on a man–for–man basis these were possibly the best units in the Allied armies. Each of these units had extensive previous combat experience in Sicily, Italy and/or Normandy.

There were also a number of above–average tank and reconnaissance units in the XXX, VIII, and XII Corps which saw action in Operation Market–Garden. These were experienced and well–equipped units which generally performed well.

There were four British infantry divisions which participated in Operation Market–Garden. These were the 3rd, 15th, 43rd, and 50th Divisions. All four of them possessed massive artillery firepower due to their large artillery battalions. In addition, the 15th, 43rd, and 50th Divisions were the best British infantry divisions in the theater, all with previous combat experience in North Africa, Italy, and Normandy. The 3rd Division was less experienced, having seen its first action on D-Day.

German Wehrmacht

Organization

The term "Wehrmacht" is all–inclusive and translates roughly as "armed forces." The Wehrmacht consisted of the German Army (or "Heer"), the German Air Force (or "Luftwaffe"), the German Navy (or "Kriegsmarine"), plus the Waffen–SS.

Most of the German units that fought on the ground in the Market–Garden area were part of the regular German Army, but the Group Erdman and Group Walther "Divisions" were part of the Luftwaffe. There are also a few independent Kriegsmarine battalions that were part of the German Navy. The Waffen–SS was neither Army, Navy, or Air Force, and for all practical purposes it formed a fourth major branch of service.

German units located near the front lines usually served under the operational command and control of the Army. In the Market–Garden area, the highest Army headquarters was Oberkommando West (OB West), which was the supreme headquarters for the entire western front, and just happened to be located in the outskirts of Arnhem. Below OB West in the Market–Garden area was the Luftwaffe's 1st Fallschirmjager Army and the II (2nd) Fallschirmjager Corps. Reinforcing corps consisted of the LXXXVI (86th) Corps, II (2nd) SS Panzer Corps, and the LXXXV (85th) Corps, which was part of 15th Army, located off the map area to the west.

A large variety of under–strength German divisions and smaller units fought in the Market–Garden area. Some of this was due to German flexibility in forming ad hoc "kampfgruppen," and a lot was also due to the general state of disorder of the German armed forces after the summer of 1944. Most of the German divisions sent to the Arnhem area were depleted from the summer's fighting, and were taking on replacements and training them. This was considered a quiet sector of the western front at that time, and was a gathering place for training divisions, replacement battalions, and other new formations receiving their first initiation to combat. What an initiation they would receive!

For the reasons given above, practically every German division that fought in this area had its own unique organization. In theory, a standard German infantry division at this stage of the war had three infantry regiments, each of two battalions, plus three artillery battalions, an engineer battalion, a motorized reconnaissance battalion (or company), and an antitank battalion. SS panzer divisions officially contained two panzergrenadier (motorized) infantry regiments, each of three battalions, plus a panzer regiment with two battalions of tanks, and smaller units. However, all but one of the German divisions that fought in the Market–Garden area were well below authorized establishments. In particular, the 10th SS Panzer Division was weak in tanks, and the 9th SS Panzer Division had even fewer tanks and no artillery.

Like the British 21st Army Group, the German forces contained a large number of independent regiments and battalions that were available to attach to the divisions. Unlike many battles, in this action the Germans had more of these corps– and army–level units available than the Allies did, for reasons mentioned above, and had a larger variety of them as well.

Assessment

All things considered, the best German divisions to fight in the Market–Garden area during the time period covered by the game were probably the 9th and 10th SS Panzer Divisions. These units were formed in 1943 as the II SS Panzer Corps, and fought first at Tarnopol on the eastern front in early 1944, and then opposed the British at Caen in Normandy. By late summer 1944, both divisions were far below strength and in need of rebuilding, especially their panzer regiments, so they where sent to the Arnhem area to rest and recover.

The next–best German divisions in the Market–Garden area were the Group Erdman and Group Walther "Divisions". Group Erdman contained the remnants of the 2nd, 6th, and 7th Fallschirmjager (airborne) regiments, and was redesignated as the 2nd Fallschirmjager Division during this battle. Group Walther was a new formation with three new fallschirmjager regiments, the 16th, 17th, and 18th. It was redesignated as the 7th Fallschirmjager Division soon after this battle.

The 107th Panzer Brigade was also an excellent unit, with the only full strength Panther tank battalion in this area. It was created as an expedient, to fill the gap left in the German lines when the panzer divisions in the area were withdrawn for rebuilding. The 107th participated in most of the attempts to cut Highway 69, and gave excellent service, although by the end of the battle it was all but destroyed.

The 59th Infantry Division was the only regular German infantry division to fight in the Market–Garden area during the time period covered by the game. This was an "average" German infantry division which was originally formed in early 1939. It fought in Poland in 1939, and participated in the 1940 French campaign. It was below its normal strength during Operation Market–Garden because portions of the division were detached and still guarding the Dutch coast, but otherwise it was an experienced, well–led, and battle worthy formation.

Of lesser quality were the 84th, 85th, 180th and 406th Training Divisions. These were composed primarily of men who had just completed their basic training, and were about to enter combat for the first time. They were rushed to the front during Market–Garden to hold the line and free other, more experienced units for offensive operations. Although they had no previous combat experience, they performed adequately, and were all upgraded to regular infantry divisions after this battle.

The least effective of the German divisions to fight in the Market–Garden area was the 712th Infantry Division. This division was a "static" division, created from over–age reservists to garrison the Dutch coast. It performed very poorly in combat compared to other German infantry divisions, and was used as a diversionary force to tie down portions of the British XXX Corps.

The miscellaneous, independent German regiments and battalions which fought in the Market–Garden area were of variable strength and quality. Some of them, including portions of the 502nd and 506th Heavy (Tiger) Tank Battalions, were excellent formations, consisting of well–trained, experienced professionals and specialists. At the other end of the spectrum, there were also a number of rear–area security and Ost battalions, most of which had only limited combat capability.

Units - Velikiye Luki

"Attack! If you have no results today, you will tomorrow; even if you achieve nothing but the pinning of the enemy, the result will be felt elsewhere." – Joseph Stalin, February 1942

Red Army of Workers and Peasants

Organization

During and before WWII, the official name of the Soviet Army was the "Red Army of Workers and Peasants," abbreviated RKKA in Russian. It was not officially renamed the "Soviet Army" until 1946.

During the time period covered by the game (November 1942 to January 1943), Red Army units in the Velikiye Luki area were part of the 3rd Shock Army. ("Shock" is the literal and most common translation of the Russian word "udarnaya," but "assault" probably captures its meaning better in English.) The 3rd Shock Army contained three subordinate corps: the 2nd Mechanized, the 5th Guards Shock, and the 8th Estonian. Each of these corps contained a number of divisions and brigades. (Note that the 2nd Mechanized Corps was an "old style" corps with no fixed organization. It contained a variable number of subordinate divisions and brigades, unlike the "new style" mechanized corps, which were actually division–sized units with a fixed organization of four brigades.)

All the Red Army divisions that saw combat in the Velikiye Luki area during the time period covered by the game were rifle divisions, although one cavalry division was in reserve nearby, and is therefore included in the game as a historical variant. Numerous Red Army brigades also participated in the battle, and these included tank, rifle, mechanized, and ski brigades.

Note that the names of the army, corps, and divisional HQ units (as shown on the units) are all in large type, and the names of brigade HQ's are in small type.

In addition to its divisions and brigades, 3rd Shock Army and its three corps also contained a number of independent regiments and battalions of artillery, engineers, and armor. Divisions located in the most important sectors, or those involved in the heaviest fighting, frequently had several battalions of these corps and army troops attached to them.

From its inception in early 1918, the Red Army designated *all* its infantry units (of all sizes) using the word "rifle" instead of "infantry." This was done primarily for morale and propaganda reasons because, in the Imperial Russian Army of WWI, "rifle" units were considered to be elite formations, and the "infantry" units were normally of poor quality. By late 1942, the second year of the war with Germany, almost all Red Army rifle divisions were officially organized and equipped in the same way, and contained the same quantities and types of subordinate units. Each Red Army rifle division consisted of three rifle regiments (each of three battalions), three artillery battalions, an antitank battalion, a small engineer battalion, a reconnaissance company, and several rear–area, non–combat battalions. In the game, all the non–combat battalions have been combined into the divisional headquarters unit.

Beginning in September 1941, Red Army units of all types which distinguished themselves in combat received the designation "Guards," along with a new (and normally lower) formation number. (A few elite and/or special units were designated Guards prior to their first combat, but that was unusual.) Guards units were almost always tougher and more effective in combat than non–Guards formations, and there were several reasons for this. Guards units were authorized higher strengths in both men and equipment, and they were the first to receive new and improved items such as radios, better tanks, etc. Their superior performance was also due to their previous combat experience and demonstrated abilities, slightly higher levels of pay and privileges, and their morale–boosting name and "Guards" badge.

Although they were authorized (and often had) more men and equipment, most Guards units were *organized* the same way as non–Guards formations, at least at the scale depicted by the game. For example, each Guards rifle division contained three rifle regiments, each of three battalions, plus three artillery

battalions, etc., just like all other rifle divisions. The differences in organization and equipment generally lay *within* the battalions and companies, rather than at the higher levels.

Third Shock Army also contained several independent tank, rifle, and mechanized brigades, plus two ski brigades. The smallest of these brigades consisted of just two or three battalions of the same type; the largest had seven battalions of different types, and were in effect miniature divisions.

During the first two years of the war with Germany, the Red Army created a large number of these independent brigades, similar to divisions but much smaller. This policy was a temporary expedient, necessitated by the Red Army's huge losses among high–level commanders and HQ units during the first few months of the war. Basically, the Red Army *had* to get more men into action immediately, but didn't have time to organize and train all the divisions it needed, and also didn't have enough officers capable of commanding all those new divisions. The smaller brigades could be raised, trained, and moved to the front more quickly, and in most cases could be commanded, at least in an acceptable fashion, by lower–ranking officers who had less experience and training.

The expedient worked. By 1943, the crisis had passed, and many regimental and brigade commanders had proven themselves in combat, and had acquired plenty of experience. The creation of new independent brigades essentially ceased that year; most of the rifle brigades still in existence were then expanded into rifle divisions, and most of the tank and mechanized brigades lost their independence in order to become permanent components of the new tank and mechanized corps. Only a few specialized units, such as the two ski brigades in the 3rd Shock Army, kept their status as independent brigades during the last two years of the war.

Assessment

The Red Army of WWII, like any military force, had both strengths and weaknesses. Paradoxically, one of its greatest weaknesses was also one of its greatest strengths: its supreme commander, Joseph Stalin. Although Stalin was both paranoid and brutal, and did not care in the least how many of his own people he killed in order to acquire and maintain absolute power, he was also aware that he was not infallible. Unlike most dictators, he actually came to realize, just in time, that he was not

a very good military strategist. After the initial shock of the German invasion wore off, Stalin's first reaction was to personally direct military operations at the front. However, he made mistakes that soon became obvious even to him, and the German Wehrmacht taught him and many other Red Army commanders a severe lesson in the summer and early fall of 1941. After he was saved by the bad weather in October and November of that year, Stalin largely stopped intervening in the details of military operations, and instead devoted himself primarily to the larger, more "political" issues of grand strategy and directing the Russian war economy. He found and promoted reliable, competent military subordinates, and for the rest of the war wisely delegated most military details to them.

Among the Red Army's other great strengths were the huge size of the Soviet Union, which allowed it to trade space for time, and its nearly inexhaustible reserves of manpower, which allowed it to trade blood for time. These two factors were the *only* reasons why the Soviet Union was able to survive and recover from the defeats it suffered in 1941 – defeats that certainly would have destroyed any smaller or less populous nation.

Another important strength was the quality of most of the Red Army's weapons. Although simple and even crude by western standards, Russian small arms, tanks, aircraft, and artillery were both reliable and effective. Among the best were the PPSH submachine gun, the KV, T–34, and JS tanks, the Sturmovik attack aircraft, the 120mm heavy mortar, and the Katyusha rocket launcher. All were produced in huge numbers, and they suited the Red Army and its style of warfare very well.

On the negative side, in most technical, tactical, and operational matters the Red Army was quite backward by the standards of the 1940's. It was completely incapable of doing many things that were performed routinely and taken for granted in the German, British, and American Armies. For example, radios were almost nonexistent in the Red Army until the last year of the war: most individual Russian tanks and aircraft *never* had them, and for several months in late 1942 (the same time period covered by this game), the *entire* 62nd Army, responsible for defending the vital city of Stalingrad, had exactly *one* two–way radio. (It was located at 62nd Army Headquarters, and was used to communicate directly with Red Army High Command in Moscow. All of 62nd Army's communications with the subordinate units under its command were either by field telephone or messenger.)

In addition, at all but the very highest levels, the Red Army suffered from a serious lack of competent and professional leadership. This was especially true with regard to mid–level formations such as battalions, regiments and divisions. Most of this was due to Stalin's brutal and paranoid purge of the officer corps in 1937 and 1938, which had decapitated the Red Army: more than 35,000 officers were either shot or sentenced to long prison terms.   The losses came disproportionately from the higher ranks, and the Red Army never fully recovered. Among those executed were the young and innovative Chief of the General Staff, Marshal Tukhachevsky, the Commanders of the Air Force and Navy, the Chief Inspectors of Artillery and Tanks, three out of five marshals, all eleven Vice–Commissars of War, thirteen out of fifteen army commanders, 75 out of 80 members of the Supreme Military Council, including all the Military District Commanders, 57 out of 85 corps commanders, 110 out of 195 division commanders, and 220 out of 406 brigade commanders. In less than two years, the Red Army lost half its total officers, including 90 percent of its generals, and 80 percent of its colonels. Almost without exception, the officers who survived the purge were the men who were most reliable politically, *not* those who were most intelligent, most competent, or the most experienced and qualified military leaders. The result, when combined with the infamous Commissar system and the traditional inertia of the Russian peasant, was a military almost completely lacking in personal initiative and tactical finesse, and which was usually able to succeed only through the application of unsophisticated brute force and overwhelming numbers.

As discussed above, Guards formations were the elite units of the Red Army. They were typically stronger, more aggressive, better led, and more effective than non–Guards units. In some ways and in some units, the performance and overall combat power of Guards units approached that of typical, comparably–equipped German units, but in general the Germans maintained a qualitative edge over even the Guards until the very end of the war. Guards units which fought in the Velikiye Luki area consisted of the 9th, 19th, 21st, and 46th Guards Rifle Divisions, one regiment of the 8th Guards Rifle Division, the 5th Guards Shock Corps Artillery Regiment and Engineer Brigade, and two regiments of Katyusha rocket launchers. (Note that all Red Army engineer brigades and Katyusha regiments were in fact battalion–sized units, even at full strength, in spite of their official designations.)

Although they were not yet Guards units in the winter of 1942–43 (as several would later become), a few Russian units were nevertheless above average in effectiveness when compared to the mass of the Red Army. The divisions in the game which fall into this category consist of the 150th "Stalin" Rifle Division and the 257th Rifle Division. The 257th became the 91st Guards Rifle Division in April 1943 (in recognition of its performance at Velikiye Luki), and the 150th Rifle Division was the unit which raised the Soviet flag over the German Reichstag in Berlin in April 1945.

Also above average when compared to most of the Red Army were its technically oriented units such as corps– and army–level artillery and engineers, armored and motorized units, and specialized formations such as cavalry and ski units. The personnel in these units tended to have more education and/or training, due to the nature of their equipment and the requirements of their function.

Most of the Red Army's divisions were rifle divisions. Over 800 of these rifle divisions existed at some point during WWII, although no more than about 500 were ever in existence at the same time, and two or more completely different divisions may have carried the same identification number at different times during the war. This was because the divisional numbers were frequently re–used whenever the old division was destroyed, and a completely new division was then created using the old number.

"Ordinary" rifle divisions which fought in the Velikiye Luki area during the time period covered by the game included the 7th Estonian, 28th, 32nd, 249th Estonian, 357th, 360th, and 381st. In addition, the 47th and 334th Rifle Divisions, which remained in 3rd Shock Army reserve for the duration of the battle, are available in the game as historical variants.

Compared to most western infantry divisions (such as those in the German and American armies), Red Army rifle divisions had fewer men, fewer heavy weapons, less able and less experienced leadership, inferior communications and logistics capabilities, fewer specialized support elements and (all things considered) significantly less total combat power. On the other hand, individual Red Army soldiers and small units often had more short–range firepower in their own hands due to the wholesale issuing of submachine guns. And finally, the huge size of the Red

Army meant that, almost regardless of losses, it was able to maintain an average numerical superiority of about 3:1 (in both men and units) along most sectors of the front.

German Wehrmacht

"It is a curious thing that, although every individual soldier returning from the Eastern Front considers himself personally superior to the Bolshevik soldier, we are still retreating and retreating." – Joseph Goebbels, September 1943

Organization

Most of the German units that fought on the ground in the Velikiye Luki area were part of the regular German Army, but the 6th Luftwaffe Field Division was of course part of the Luftwaffe. The Waffen–SS was neither Army, Navy, or Air Force, and for all practical purposes it formed a fourth major branch of service. Finally, the "Brandenburger" commandos were actually part of the Abwehr, which was not even officially part of the Wehrmacht, but was an independent intelligence service roughly equivalent to the modern American CIA.

Regardless of their *official* affiliation, all German units located near the front lines usually served under the operational command and control of the Army. The Army's LIX (59th) Korps was initially responsible for all combat operations in the Velikiye Luki area, and was subordinate to the German 9th Army until October 1942. That month LIX Korps came under the jurisdiction of the army–level "Gruppe Chevallerie," an ad hoc army–level command created to relieve the over–extended 9th Army of some of its responsibilities. During the course of the battle for Velikiye Luki, a second corps–level HQ arrived to control the relief effort. This was the ad hoc "Gruppe Woehler," named after its commanding officer; it was also subordinate to "Gruppe Chevallerie."

A large variety of German divisions and smaller units fought in the Velikiye Luki area. Some of this was because of characteristic German flexibility with regard to command and control, but much of it was also due to the insatiable requirements of the much larger and even more desperate battle taking place at Stalingrad at the same time, some 500 miles to the southeast. The Germans sent most of their available reserve divisions south to Stalingrad, and as a result, much of what was left to send to Velikiye Luki consisted of miscellaneous smaller units and nearby local reserves.

The organization of the German divisions that fought in the Velikiye Luki area was also more variable than Red Army divisions. By this stage of the war, the standard German infantry division had three infantry regiments, each of two battalions, three artillery battalions, an engineer battalion, and a motorized heavy weapons battalion that doubled as a reconnaissance and antitank battalion. Mountain and motorized infantry divisions had two infantry regiments, each of three battalions, plus numerous smaller units. Most panzer divisions had two motorized infantry regiments, each of two battalions, plus one or two battalions of tanks, and smaller units. Beyond that, there was almost no standardization; the Luftwaffe field divisions and all subdivisional formations such as the 1st SS Motorized Brigade each had their own unique organizations.

Like the Russian 3rd Shock Army, the German forces contained a large number of independent regiments and battalions that were available to attach to the divisions. The Germans generally had more of these corps– and army–level units available, and had more variety among them as well.

Assessment

Germany lost the war against the Soviet Union for several reasons, none of which was sufficient by itself, but each factor played a part. However, the single most important factor in Germany's defeat was Hitler's disastrous leadership. With very few exceptions, all his major decisions after June 1941 proved to be wrong. Furthermore, his unjustified, incompetent meddling in the details of tactics and operations, which increased significantly in late 1941 and continued for the remainder of the war, negated much of the unparalleled professional expertise of the German Army.

Probably the second most important factor in Germany's defeat was the gross mismanagement of German military production and the national economy early in the war. The decision to delay conversion to a wartime, mass–production economy until 1943 was a purely political one; there was no objective reason why the much higher 1944 production levels could not have been achieved in 1941, especially since the factories, sources of raw materials, transportation networks, and the industrial work force were all still completely intact. Hitler and the Nazis were simply afraid that German morale, and their control over Germany, would weaken if too many hardships were imposed on the German people. The last two years of the war proved how wrong that theory was.

Another important factor in Germany's defeat was the simple arithmetic of the manpower balance. By 1942, Germany, with a prewar population of approximately 80 million, was at war with virtually the entire world. The sizes of the Russian and American populations, which included some 350 million people just in those two countries, guaranteed that Germany could not hope to prevail in a war that lasted beyond the end of that year.

On the other hand, the fact that the war lasted as long as it did was primarily due to the consistent, across–the–board superiority of German tactics, doctrines, and military leadership, especially among German Army commanders at all levels, from the rank of sergeant on up. It says much for the professionalism of the German Army that they were able to maintain this qualitative superiority, albeit at decreasing levels, until almost the very end of the war, in spite of catastrophic losses and defeats brought about largely by Hitler's irrational decisions.

Could Germany have defeated the Soviet Union? Yes, but not unless Hitler had made some very different decisions, or had been a very different kind of person. The actual German military superiority over the Soviet Union in 1941 and 1942 *was* sufficient for the task, but barely, and without much margin for Hitler's mistakes. A campaign planned from the outset to require two years, not just one, and in which *all* military decisions were made by the professional officers commanding the forces in the field, would have had a reasonable chance of success.

All things considered, the best German division to fight in the Velikiye Luki area during the time period covered by the game was probably the 8th Panzer Division. This unit was formed in 1938 as the 3rd Light Division, fought in Poland as

such in September 1939, and was upgraded to a panzer division in October 1939. It then participated in the French campaign of 1940, and finally fought as part of Army Group North in the vicinity of Leningrad in 1941–42. By late 1942 it was well below strength and in need of rebuilding, especially its panzer regiment, which only had 32 operational tanks, 27 of which were of pre–war Czech vintage.

The next–best German division in the Velikiye Luki area was the 20th Motorized. It was created in late 1935 as the 20th Infantry Division, and was fully motorized two years later. It fought in Poland and France, and in 1941 participated in the battles of Minsk and Smolensk as part of Army Group Center. It was then transferred to Army Group North, and was involved in several battles near Leningrad. In late 1942, during the time period covered by the game, the Germans redesignated all their motorized infantry divisions as panzergrenadier divisions, including the 20th.

The 3rd Gebirgsjager (mountain infantry) Division was also an excellent unit, with specialized equipment and training for mountain and winter combat. It was created using personnel from the 5th and 7th Divisions of the former Austrian Army, which was absorbed into the German Wehrmacht in 1938. It participated in the Polish campaign in 1939, and then distinguished itself at Trondheim and Narvik in Norway in 1940. In 1941, it fought on the Arctic front near the Russian port of Murmansk. In 1942, the bulk of the division was transferred to the Velikiye Luki area, although one of its two mountain infantry regiments remained in Finland, along with one of the division's artillery battalions.

The 1st SS Motorized Brigade was created in April and May 1941 out of surplus SS personnel. Originally intended to perform rear–area security duties in occupied Russian territory, as the campaign wore on the brigade gradually became more and more involved in front–line combat, and it performed well in this capacity. By late 1942, it had suffered significant losses and was well below its authorized strength, although it remained an effective combat unit.

There were four regular German infantry divisions that fought in the Velikiye Luki area during the time period covered by the game. Three of these were "average" mid–war German infantry divisions: the 83rd, 205th, and 291st. Each of these divisions was below its normal strength, with only six infantry battalions instead of nine, but otherwise they were all experienced, well–led, and battle worthy formations.

Of lesser quality was the 6th Luftwaffe Field Division. In September 1942, the Luftwaffe had a personnel surplus of nearly 200,000 men, which were badly needed by the Army as infantry replacements. However, Hermann Goering refused to permit transfer of these men to the Army, and instead got Hitler to approve the immediate creation of 22 Luftwaffe field divisions. Although the officers and men in these new Luftwaffe divisions were all young, fit, and intelligent, they had no experience or training as infantrymen, and received little or none before they were thrust into the front lines. Lacking qualified infantry NCO's and officers, the Luftwaffe field divisions did not perform well, and suffered excessive and unnecessary casualties. The Army protested bitterly but to no avail, arguing quite correctly that these men, if processed and trained as normal infantry replacements, could instead have brought 40 depleted infantry divisions back up to full strength and capability. Germany simply could not afford to squander precious manpower in this way, and it was errors such as this that sealed the fate of the Third Reich.

The least effective of the German divisions to fight in the Velikiye Luki area was the 331st Infantry Division. This division was created from over–age reservists in late 1941, and was hurriedly sent to the Russian front in early 1942. It performed very poorly in combat compared to other German infantry divisions. According to one source, during the battle for Velikiye Luki, two of the division's three regimental commanders were so old and in such poor health that they were physically unable to leave their command posts.

The miscellaneous, independent regiments and battalions which fought in the Velikiye Luki area were of variable strength and quality. Some of them, including the Brandenburg commandos and several armored units, were excellent formations, consisting of well–trained, experienced professionals and specialists. At the other end of the spectrum, there

were also a number of rear–area security and construction battalions, most of which had only limited combat capability.

Units - Utah Beach

"The American Army does not solve its problems – it overwhelms them." – American General to British diplomat, 1944

U.S. Army

Organization

During the time period covered by the game, most of the U.S. Army units in the Utah area were part of the American VII (7th) Corps. Only two types of American divisions fought in this sector: infantry and airborne. No American armored divisions saw service in the Utah area.

In addition to its divisions, VII Corps also contained a large number of independent battalions of artillery, engineers, armor, recon, anti–aircraft, and antitank guns. At any given time, each division normally had several battalions of these Corps troops attached to it.

All of the American infantry divisions were organized and equipped in the same way and contained the same quantities and types of subordinate units. Each American infantry division consisted of three infantry regiments (each of three battalions), four artillery battalions, an engineer battalion, a reconnaissance company, and several rear–area, non–combat battalions. In the game, all of the non–combat battalions have been combined into the divisional headquarters unit.

Each of the two American airborne divisions had three regiments of airborne infantry (paratroops) and one regiment of glider–borne infantry. Each of the airborne and glider regiments had three battalions. The airborne divisions therefore had more front–line infantry battalions than the infantry divisions (12 versus 9), but the airborne battalions had fewer men and heavy weapons than the regular infantry battalions. Each airborne division also had an airborne engineer battalion (smaller than the ones in the infantry divisions) and a recon company (which was split up into teams to serve as pathfinders for the drop on June 6th, and was not re–assembled during the time period covered by the game).

Once in combat, the airborne divisions proved to have inadequate artillery and antitank support compared to the infantry divisions. On paper, the airborne divisions each had at least three airborne or glider artillery battalions (the 82nd Airborne had four), plus a glider anti–aircraft/antitank battalion, but all of these units were equipped with smaller–caliber guns than their non–airborne counterparts. To make matters worse, most of the airborne artillery and anti–aircraft/antitank units either lost their guns during the drop on June 6th, or (in the case of two battalions that arrived by sea at Utah Beach) were greatly delayed in getting into action.

The Motorization Myth

It is a well–known "fact" that the U.S. Army in WWII was fully motorized; less well–known is what those words really mean. The U.S. Army was "fully motorized" in the sense that (with very minor exceptions) it did not make use of horses. However, the words "fully motorized" are usually taken to imply something more – namely, that each unit always had sufficient trucks and other vehicles to "lift" itself completely under its own power, and that was definitely *not* the case for the U.S. Army in WWII. Most American infantry units did *not* contain sufficient vehicles of their own to carry the whole unit at the same time, and neither did many of the rear–area, non–combat units. When necessary, American infantry and rear–area units could be (and were) *temporarily* motorized by attaching several independent truck companies to them from a higher–level transportation pool, but there were never sufficient truck companies to motorize *all* the units at the same time, much less to motorize them all *and* keep them all supplied. In fact, during the famous "race across France" in August and September 1944, many American units had to be stripped of *all* their vehicles and left *completely* immobile, deep in the rear, so that the few spearhead units could be kept both mobile and supplied.

For the first month ashore in Normandy (the time period covered by Utah Beach), all of the independent U.S. Army truck companies were fully occupied with transporting and distributing supplies, and building up a rear–area infrastructure to support the huge American expeditionary force. It was not until the end of July (and Operation "Cobra") that enough surplus transportation capability existed to begin motorizing *some* of the regular infantry units for combat purposes. Until then, when American infantrymen advanced, they *all* did so by walking, just like their "non–motorized" opponents.

Assessment

In order of their arrival in Normandy, the following American divisions fought in the Utah area: 82nd and 101st Airborne, 4th, 90th, 9th, 79th, 30th (one regiment only), and 83rd Infantry Divisions. Contrary to many traditional ideas about the U.S. Army in WWII, not all of these divisions performed equally well in combat.

It should come as no surprise that the two airborne divisions were elite units, better than the regular infantry on a man–for–man basis. Even more important than the morale boost provided by their special uniforms, jump badges and higher pay was the fact that almost all of the paratroopers were specially–trained volunteers who had been recruited from the ranks of infantrymen already in the army. The men who volunteered to go airborne tended to be more intelligent and more aggressive than average, and were usually the best men from their former units. The rigors of jump school honed their natural abilities to a fine edge. The airborne also attracted officers who tended to be more aggressive, less orthodox, and younger for their rank than their counterparts in the infantry divisions. The combination proved to be a success. Although airborne infantry battalions contained fewer men than regular infantry battalions, and airborne units of all types were deficient in heavy weapons and artillery when compared to the regular infantry, the airborne units still performed very well in combat, establishing a reputation for aggressiveness, initiative, and reliability. In the game, the 505th Regiment of the 82nd Airborne Division has a higher morale rating than the other American airborne units because it had more combat experience prior to D–Day.

Of the infantry divisions, the best was certainly the 9th, which already had considerable combat experience, and had fought well in North Africa and Sicily. The Allied Supreme Commander, General Eisenhower, thought that the 9th was one of the two best American infantry divisions in the European Theater (the other was the 1st Infantry, which landed at Omaha Beach).

Next–best in the Utah area was the 4th Infantry, which had not seen combat before, but which had received a lot of special training for the D–Day assault.

Most of the independent Corps–level battalions had not seen combat before either, but all were well–equipped and reasonably well–trained. Furthermore, there were enough of them so that each division normally had several of these extra battalions attached to it. They added significantly to the strength of the divisions.

Next came the 79th Infantry Division and the 120th Regiment of the 30th Infantry Division, both of which were inexperienced but performed adequately.

Finally, the 90th and 83rd Infantry Divisions did not perform well at all; most of the officers and men in these two divisions were just too green and too poorly–trained. In the case of the 90th, the divisional commander, two of his regimental commanders, and many other officers had to be relieved of duty and sent home after less than one week in action.

German Wehrmacht

Organization

Most of the German units that fought on the ground in the Utah area were part of the regular German Army, but the airborne infantry ("Fallschirmjager") and some of the anti–aircraft units ("Fliegerabwehrkanone", or "flak" for short) were actually part of the Luftwaffe, and some of the coastal artillery units were actually part of the Kriegsmarine.

Regardless of their *official* affiliation, all German units located near the front lines usually served under the operational command and control of the Army. The Army's LXXXIV (84th) Korps was responsible for all front–line combat operations in the Cotentin Peninsula (the Utah area), and it was in turn subordinate to the German 7th Army.

With one exception (the 17th SS Panzergrenadier Division), all of the German divisions that fought in the Utah area were infantry divisions; no German Panzer divisions fought in the Utah area during the time period covered by the game.

The organization of the German divisions was much

more variable than the American divisions; each of the German divisions was unique in some way. Some of them had three infantry regiments (each of two battalions), and others had two infantry regiments (each of three battalions). The German divisions also varied in the number of artillery battalions and other types of units that they contained.

Several of the German divisions that arrived as reinforcements after D–Day were split into a mobile half and a non–mobile half, and only the mobile half (or Kampfgruppe – usually abbreviated KG) was present during the time period covered by the game.

Like the American VII Corps, the German LXXXIV Korps and 7th Army contained a variety of independent regiments and battalions that were available to attach to the divisions.

Finally, there was also more variety and flexibility among the German headquarters units. In the game, the Germans have several independent regimental, garrison, and KG headquarters, which are simply smaller versions of a divisional headquarters.

Assessment

Man for man, the best German unit to fight in the Utah area was the 6th Fallschirmjager Regiment. Actually part of the Luftwaffe, this large, full–strength airborne infantry regiment was a well–trained, heavily–armed, and expertly–led unit, with extensive combat experience. Its elite status was underscored by the fact that it was one of the very few German airborne units that was still completely parachute–qualified at this stage of the war (each man had made at least nine parachute drops). Technically part of the 2nd Fallschirmjager Division (the rest of which did not fight in Normandy), the 6th operated as an independent regiment during the time period covered by the game.

Another excellent German unit was the 17th SS Panzergrenadier Division. Although the 17th SS was a new division that had just completed its combat training, it was at full strength, was well–trained and well–equipped, and most of its officers and NCO's were combat veterans with previous service in other Waffen–SS divisions.

The three best regular German infantry divisions in the Utah area were (in order of appearance) the 91st, the 77th, and the 353rd. These divisions all had previous combat experience, were fully trained and equipped by 1944 standards, and were considered by the Germans to be "Category I" divisions, suitable for offensive operations.

Of lesser quality were the 243rd, 275th, and 266th Infantry Divisions. These were considered by the Germans to be "Category II" divisions, incompletely trained and/or equipped, and only partially suitable for offensive operations. During the time period covered by the game, only the mobile portions (or KG's) of the 275th and 266th Divisions served in Normandy.

The least effective of the German divisions were the 709th Infantry and the mobile KG of the 265th Infantry. By 1944 German standards, the 709th was large, having three infantry regiments each of three battalions, but it was also deficient in heavy weapons, training, and experience. The 265th was not much better off, and was smaller as well. The Germans considered these to be "Category III" divisions, suitable for defensive operations only.

The miscellaneous, independent regiments and battalions of the LXXXIV Korps and the 7th Army were a very mixed bag. Two of them, the 7th Army Sturm Battalion and the 17th Machine Gun Battalion, were elite units, well–trained and heavily–armed. However, except for the artillery and anti–aircraft units, most of the independent battalions were not as strong or effective as their counterparts within the regular divisions.

At the bottom of the barrel for the Germans were the so–called "Ost" (eastern) battalions, which were composed of Russians and other non–Germans from eastern Europe. By 1944, large numbers of such men had been persuaded to put on a German uniform, and, although their combat value was very limited, at that stage of the war the Germans needed every soldier they could get and they knew it. On D–Day there were approximately 100 of these battalions in France – the equivalent of 10 full–strength divisions! They were organized as independent infantry battalions, most (but not quite all) of them bearing identification numbers between 400 and 800. Approximately half of the Ost battalions were retained under the direct command of the Korps and Army HQ's, and approximately half were parceled out to the

divisions. Most of the German infantry divisions in France had at least one Ost battalion permanently assigned, and some had two. Each of these battalions had a small cadre of German officers and NCO's, but despite their cadres' best efforts, the rank-and-file in these units remained very poorly-trained and poorly-equipped. Most of the men could not even speak German! It came as no surprise to anyone that they performed very poorly in combat; most of the men in these units surrendered to the Americans or British at the earliest opportunity. To be fair, the Germans were never under any illusions about the combat value of these units. They were always intended for security duties only, not front-line combat. Their value lay in the fact that having them hold down the rear area released an equal number of Germans for front-line duty, and in that they were actually a successful stop-gap.

Movement

"Aptitude for war is aptitude for movement" – Napoleon I: Maxims of War, 1831.
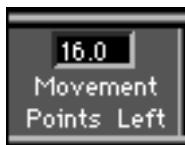
Each unit has a current movement allowance that is shown within the Command Box whenever the unit is selected. Each unit spends "points" from this allowance to enter and leave hexagons as it moves across the map. As you plot a movement path for each unit, the allowance decreases to show the movement points still available. If you change your mind and cancel a move, the allowance increases to reflect the change.

The different types of terrain generally require different numbers of movement points to enter or leave, and the same terrain may cost some types of units more movement points than other types of units. Some units are not able to enter or cross some types of terrain; for example, armored and motorized units cannot cross rivers except at an intact tank bridge or ferry. Movement points do not accumulate from one turn to the next, and may not be transferred from one unit to another.

There are six types of movement: **tactical** (indicated by three long arrows on the button within the Command Box), **strategic** (indicated by a single long arrow), **passenger** (indicated by a tank for the passengers to ride on), **automatic** (indicated by two diagonal arrows joined head–to–tail), **stack movement**, and **divisional movement**.

You may not assign movement orders that would cause a unit to enter or cross prohibited terrain. All movement point costs are cumulative, and, in general, movement orders may not be assigned that would cause a unit to exceed its current movement allowance. However, a unit may always use tactical movement to move **one hex** per game–turn, regardless of movement point allowances or costs, **except for the following**:

• to enter or cross prohibited terrain;

• to move into a hex that contains an enemy unit or a hex that is already at its stacking limit;

• to move from a hex that contains the strong zone of control of an enemy unit or stack **directly** into another hex that is

also in the strong zone of control of the **same** enemy unit or stack.

You *may* assign movement orders that have only a small chance of actually being carried out, as long as they are *theoretically* possible. For example, you may assign a unit to move to a hex that is currently occupied by enemy units, blocked by enemy zones of control, or is already at its stacking limit, but if, when resolving the movement, the time comes for the unit to enter a hex that it cannot, its entry into that hex is delayed until the movement becomes possible.   If the turn ends before the movement becomes possible, the movement is not carried out.

Tactical Movement

Tactical movement represents reasonably careful cross–country movement, with the unit spread out and ready for combat. A unit conducting tactical movement receives no movement advantage for moving along a road because most of the unit is not on the road; what matters is the other terrain in the hex.

The tactical movement allowances of most units in the game range from 6 (for average foot infantry) up to 16 (for armored cars and motorized recon units); the movement allowances of some HQ and heavy artillery units are lower.   Tactical movement allowances may be decreased by fatigue or disruption (or, for some units, by supply status).   Each point of fatigue and/or disruption decreases a unit's tactical movement allowance by 3.3 percent (rounded down). In addition, all armored, motorized, and semi–motorized units have their tactical movement allowances halved when in defensive supply, reduced to one–third when in minimal supply, and quartered when in no supply.

The 6 to 16 range of tactical movement allowances corresponds to an average speed of 0.9 to 2.5 miles per hour, which may not *seem* very fast, but remember what's being represented: average, reasonably careful front–line movement of fairly large units. In this environment, each man or vehicle is normally moving only about half the time, due to "overwatch" (leap–frog) tactics, inevitable delays in coordinating the movement of different elements, waiting for patrols or scouts to check something out and report back, etc.   And even when men and vehicles are actually moving, they are doing so slowly and carefully, more so than you would think if you've never done it.   When the consequences are your own life or death, uncertainty makes most people considerably more cautious!

Note that there are some static German units in Market-Garden and Utah Beach. These units (typically coastal artillery or anti-aircraft) have a movement allowance of 0. These units cannot be assigned movement orders and so may never move. (The guns of these units were permanently emplaced.) Static units, or units restricted because they are part of a garrison, can easily be identified by an orange (or white) letter 'R' (for Restricted movement) in the upper left hand corner of the unit data window.

Strategic Movement

Strategic movement represents administrative or non–combat movement, with the unit concentrated into one column to take maximum advantage of roads and (if available) vehicles. Strategic movement allowances are generally higher than tactical allowances, and in addition, units pay lower costs for moving along roads. The strategic movement allowances of most units in the game range from 9 (for average foot infantry) up to 32 (for most motorized units), although this may be decreased by fatigue, disruption, or enemy air interdiction (or, for some units, by supply status). The strategic movement allowances of some HQ and heavy artillery units are lower. Each point of fatigue and/or disruption decreases a unit's strategic movement allowance by 3.3 percent (rounded down). In addition, all armored, motorized, and semi–motorized units have their strategic movement allowances halved when in defensive supply, reduced to one–third when in minimal supply, and quartered when in no supply. Reductions of strategic movement allowances due to enemy air interdiction are variable but can be significant, and depend upon the level of enemy air activity, enemy air allocations, and the current weather conditions.

A typical infantry unit that conducts strategic movement across 9 clear terrain hexes in one turn would (in reality) have walked cross–country for 4 hours at an average speed of 1.4 miles per hour, which may *seem* slow but, when you consider rest stops, the loads the men are carrying, and the fact that they might have to keep it up day after day, it's quite realistic. And, in some cases, the game does allow some infantry units to do considerably better. For example, a "fast" infantry unit (such as German airborne infantry) moving exclusively along a primary road can cover up to 24 hexes (15 miles) in one turn. That's an average of almost 4 miles per hour, maintained for 4 hours, and if necessary the unit could keep this pace up for many turns. This level of performance is actually near the upper limit of human abilities,

especially when you consider that each man in such a unit is always carrying from 60 to 90 lbs. of gear.

In Utah Beach and Market–Garden bicycle, semi–motorized and motorized units can, of course, move much faster than infantry on foot, especially on a road. In the game, a truck or armored car unit moving exclusively along a primary road can traverse up to 128 hexes (79 miles) in one turn, and in so doing averages just under 20 miles per hour. Although 20 mph sounds slow, that was the average speed of WWII military convoys on a good road, and is quite realistic.

[[In Velikiye Luki, a truck or armored car unit moving exclusively along a secondary road or railroad can traverse up to 64 hexes (40 miles) in one turn, and in so doing averages just under 10 miles per hour. Although 10 mph sounds slow, remember that Russian roads were nothing but muddy, heavily rutted dirt trails, and higher average speeds were very difficult to maintain.]]

As you would expect, cross–country movement and/or tracked vehicles (which tended to be slower) reduce the average speed still more.

Even though strategic movement allows a unit to move much faster and farther, it also has several disadvantages. Perhaps greatest among these is that a unit conducting strategic movement is subject to a special combat procedure called "**ambush**" if it attempts to enter a hex that is currently occupied by an enemy unit or is in an enemy zone of control it is subject to ambush. Ambushed units may suffer higher–than–normal losses, even up to the point of being completely eliminated. In addition, a unit that uses strategic movement to enter **any** hex in "enemy territory" (i.e., a hex that was last occupied by an enemy unit) is much less likely to complete its planned move. This is true *regardless* of whether or not the "enemy–owned" hex is presently occupied by an enemy unit or zone of control, and is due to the fact that the lead elements of any column moving through enemy territory are much more likely to get "spooked" by uncertainties and to stop moving, thereby causing the rest of the column to come to a halt behind them.

There are still more disadvantages to strategic movement. A unit that is attacked in any way while conducting strategic movement has its defense and antitank strengths **halved**, and does not receive any benefit from field fortifications, or bunkers (it does benefit from other favorable terrain). Even when it is in and/or

attempting to enter another "friendly–owned" hex, a unit using strategic movement still stops as soon as it enters **any** enemy zone of control, and does not resume moving that turn as long as it remains in an enemy zone of control. A unit may not conduct strategic movement if it starts the turn in a strong enemy zone of control (3 or more ZOC points; see "Zones of Control"). If a unit starts the turn in a weak enemy zone of control (1 or 2 ZOC points), it may use strategic movement to *leave* the enemy zone of control, but **not** to move directly into another enemy zone of control (of any strength). Finally, most units have their own zones of control reduced while they are conducting strategic movement.

The impracticality of attempting to enter "enemy territory" via strategic movement is a generally unrecognized but absolutely essential component of any accurate operational–level simulation. No real–world combat leader would *ever* knowingly drive a road–bound convoy beyond the front line and into unscouted enemy territory, and wargames which let players do that are fostering a gross misconception. Advance rates in WWII may have been fast at times, but they were never *that* fast! Even when the attacker was completely unopposed, his front line units still moved at tactical movement rates, *not* strategic rates. A case in point is the record of the British Guards Armored Division in its largely unopposed advance across northern France and Belgium in late August, 1944. In spite of being fully motorized and facing only token German opposition, this division managed to advance an average of only 12 kilometers per day, totaling some 250 kilometers in 21 days. Because most of the units in the Guards Armored Division have a tactical movement allowance of 12 kilometers per turn, and because the terrain and weather conditions were both favorable, it follows that this famous historical advance was well within the division's tactical movement abilities. Even if you make the reasonable assumption that those units were moving only during the daylight turns (of which there are three in late summer), their average movement was still only 4 hexes per daylight turn (*or less than 1 mile per hour*) – *much* less than the tactical movement allowance of every unit in the division! Finally, if the Guards Armored *had* been using strategic movement along secondary roads, that famous historical advance would have taken *less than one day*, instead of the actual 21.

In the real war, something such as a one–day advance from Falaise, France to the Albert Canal in Belgium was just not possible. No general was capable of advancing that far that rapidly, because the chance that his rank–and–file would

actually have carried out such a reckless order was nil. Their lives were at stake, after all, and they knew that they would probably die if there happened to be so much as one enemy squad or vehicle on the road in front of them. Caution *always* slows down the front–line troops, no matter what the screaming voice on the radio is saying!

Movement As Passengers

Everyone has seen pictures of WWII infantrymen riding on tanks. The Red Army was the first to adopt this practice, and by late 1941 it was standard procedure for the infantry units in their tank brigades. The Germans quickly followed suit and used the tactic more and more as the war went on. By the end of the war practically every army used tanks to carry infantry when necessary, although it was always less common in the British and American armies because their units usually had sufficient trucks and/or halftracks.

Under certain conditions, some units in the game may be transported as passengers by other units. Any non–motorized or semi–motorized infantry or engineer–type unit may be transported as passengers. The unit which transports the passengers must be a tank, tank destroyer, assault gun, or mech recon unit which is attached to the *same HQ* as the unit to be transported, and is of the *same size or larger* than the unit to be transported. Size for this purpose refers to companies and battalions, not strength points. Therefore, regardless of its current strength, an armored battalion can transport either a battalion or a company as a passenger, but an armored company can only transport a company, not a whole battalion. Note that an armored battalion *may* simultaneously transport up to three company–sized units as passengers, but three armor companies may *not* combine to transport a battalion–sized unit.

Both the passenger unit and the armored unit transporting it must begin the Planning Phase stacked together in the same hex. To designate a unit as a passenger, click on the unit within the unit window, hold the mouse button down, drag the cursor on top of the transporting unit of your choice within the same unit window, and release. Passenger/transport groups are indicated within the Unit Window by colored lights above the units; if there is more than one such group in the hex, each group is indicated by lights of a different color.

During the Execution Phase, the passenger unit and the transporting unit move together to the transporting unit's

destination hex, using the transporting unit's movement allowance and movement costs. The passenger unit receives its normal fatigue and disruption modifications (increases and decreases) for the distance moved, as if it was conducting the movement on its own. If the passenger unit's movement exceeds its normal movement allowance, the effect on its fatigue is the same as if it had used its entire movement allowance.

If the passenger/transport combination is ambushed or attacked in any way during the Execution Phase (*except* for interdiction), the passenger's defense and antitank strengths are **halved** for that combat, the passenger unit automatically dismounts after the combat is resolved and both the passenger and transporting unit cease moving. Depending on the result of the combat, both passenger and transporting unit may also be required to retreat. Passengers and transporting units do not receive any benefit for field fortifications or bunkers, but do benefit from other favorable terrain in the hex when they are attacked.

The zone of control of a passenger is reduced just as if it was conducting strategic movement on that turn and in that type of terrain (regardless of what kind of movement the *transporting unit* is conducting; the transporting unit's zone of control modifiers remain normal for it). Other strategic movement restrictions (such as attempting to enter an enemy–owned hex) apply normally, but only when the transporting unit is conducting strategic movement.

Automatic Movement

 Automatic movement is a feature that allows you to assign movement orders by designating the destination hex only, and relies on your staff assistant™ to determine the type of movement and the exact path to the destination. There are two ways to assign automatic movement: the "grab–and–drag" technique described in Part I of the Operations Manual, and the automatic movement button within the Command Box (pictured above and described in Part II of the Operations Manual). If the destination hex is no more than four hexes away, your staff assistant assigns tactical movement orders to the unit; otherwise, strategic movement orders are assigned.

If your staff assistant is unable to find a permissible path to the destination hex, you are notified by a Message Window and a horn. As both a convenience and a safety measure (to avoid ambushes), your staff assistant takes into account all enemy units and zones of control that are currently **known to you**, and

therefore does **not** assign movement paths into or through **known** enemy–occupied hexes, or into or through hexes that your unit could not enter because of **known** enemy zones of control. You may assign such movement paths yourself, but you must do it manually using the Command Box technique described in Part II of the Operations Manual.

Note: when the "Limited Intelligence" Realism Option is "on," movement paths assigned by your staff assistant **ignore** all enemy units and zones of control that are currently unknown to you. For this reason, when you are playing with "Limited Intelligence," it is **dangerous** to assign automatic movement paths longer than four hexes that enter or cross enemy–owned territory, because of the risk of ambush by an unseen enemy unit.

If a unit that is conducting automatic movement does not reach its assigned destination hex in one turn, the destination and the staff assistant's movement orders remain assigned on subsequent turns, and the unit will spend as many turns moving as necessary in order to reach the destination, without further intervention on your part.

Stack Movement

Stack movement is a feature that allows you to use the grab–and–drag technique to assign automatic movement or assault orders to an entire stack of units at the same time, rather than individually. To do this, hold the "shift" key down and click on the stack to get the green border around the hex, hold the mouse button down, drag the cursor to where you want the stack to go, and release. The game records these movement or assault orders as the assigned orders for **each** of the units in the stack; it is not necessary to assign separate orders or a separate movement path for each unit.

Divisional Movement

Divisional movement is a feature that allows you to assign automatic movement orders to some or all of the units that are attached to a particular HQ, regardless of their current location.

In each case, the common destination hex is **either** the current location of the HQ unit itself, **or** its destination hex, if it has already been assigned its own movement orders.

To enter divisional movement orders, **first** decide where you want the HQ unit itself to move to, and then assign it movement orders (any type) to that hex. Keep in mind that the destination hex for the HQ is **also** the destination hex for **all** of its attached units that are conducting the divisional movement. If no movement orders are assigned for the HQ unit itself, the destination hex for the divisional movement is the current location of the HQ unit.

Next, click on the button labeled "Orders" at the bottom of the HQ Sidebar. This opens the Divisional Movement Window at the bottom of the screen. The left side of this window contains three square buttons labeled "All Idle Units," "Non–Artillery," and "Non–Engaged." These three buttons are the means by which you choose which units of that division will conduct the divisional movement. "All Idle Units" moves all units attached to that HQ except those which have already received orders from you; "Non–Artillery" moves all units attached to that HQ *except* for artillery (and except for those that have already received orders from you); and "Non–Engaged" moves all units attached to that HQ which are not currently in an enemy zone of control (and which have not already received orders from you).

After you have clicked on the buttons you want, click on the button labeled "Auto Plot"; this causes your staff assistant to calculate the movement paths. (This may take 30 seconds or more, depending on the number of units, the lengths of the paths, and the speed of your machine.) When the staff assistant is finished, the "Auto Plot" button pops out, and you can review and edit the Divisional Movement orders using the normal procedures. To close the Divisional Movement Window, click on the "Orders" button on the sidebar.

Movement at Night and in Bad Weather

To reflect the increased difficulties of moving at night, the movement point costs of all non–road terrain types are **doubled** on night turns, **except** when there is a full moon **and** clear, light or moderate overcast sky conditions. (See "Weather.") In this case, the movement point costs of all non–road terrain types are increased by 50 percent.

The movement costs of all non–road terrain types are also increased by 50 percent on daylight turns when the sky condition is storm. There is no additional movement effect due to storm sky conditions on night turns.

Road movement on night turns costs 50 percent more movement points than in daylight, **except** when there is a full moon **and** clear, light or moderate overcast sky conditions. In this case, road movement costs are not affected by night.

Road movement costs on daylight turns are not affected by the sky condition.

Bridges, Engineers and Ferrying - Gold Juno Sword

Bridges

Both the Allies and the Germans were reluctant to blow bridges because both sides wanted them intact for their own reasons. Therefore, in GOLD • JUNO • SWORD all bridges are assumed to be permanent, and players may not destroy them.

Engineers

One of the primary functions of real engineer units is to provide the means for other units to cross rivers. This is normally accomplished through repairing existing bridges, building new bridges, and ferrying men, vehicles, and equipment on boats and rafts. Since none of the bridges in GOLD • JUNO • SWORD are vulnerable to destruction the main river crossing function of engineers is their ferrying abilities. They do this by means of temporary river crossings known as engineer crossings.

Engineer crossings are indicated by the letter "E" surrounded by a green dot. These temporary river crossings appear automatically on the map whenever an engineer or bridge unit of either side moves adjacent to a river or major river, in a location where there is no intact bridge or permanent ferry. Engineer crossings do **not** have to be constructed, and **may** be created in an enemy zone of control. They work just like bridges and permanent ferries: for certain kinds of units, they reduce the movement cost of crossing the river at that location. Only foot–mobile infantry, bicycle, and motorcycle units may use engineer crossings; other types of units may not. Engineer crossings remain functional and on the map as long as the engineer unit

remains adjacent to the river. However, engineer crossings may never be captured, and may be used only by units from the same side as the engineer unit creating the crossing. Enemy units never benefit from engineer crossings.

Bridges, Engineers and Ferrying - Market Garden

Bridges

There are two types of bridges: infantry bridges and tank bridges. Infantry bridges are signified by the letter "I" on the map, and tank bridges by the letter "T". Both types of bridges are hexside features, connecting two adjacent hexes across a river. In general, bridges allow easy movement across rivers for units which otherwise could not cross the river at all. (Foot–mobile infantry–type units can cross ordinary rivers without a bridge, but not major rivers.) All types of units may cross tank bridges, but only the following types of units may cross infantry bridges: foot infantry, horse drawn, semi–motorized, non–motorized HQ, bicycle, and motorcycle. Motorized and armored units may **not** cross infantry bridges.

Intact, functional bridges are indicated by a green dot surrounding the letter which signifies the bridge. When a bridge has been blown (or destroyed), the color of the dot changes to red. Blown bridges which are in the process of being repaired are indicated by a blue dot.

Whenever one of the two hexes adjacent to a bridge changes ownership from German to Allied **for the first time** (see "Ownership of Terrain"), there is a chance the bridge will be blown. Each bridge has a certain percentage chance that it will be destroyed rather than captured; depending on the bridge, that original probability varies from one to thirty percent. (Several of the most important bridges have a very low probability of being blown because the German field commanders were under explicit orders not to destroy them.) Except for the presence of German engineers, this percentage is always the same for a given bridge, regardless of how many or what types of German units are nearby. **However, if there is a German engineer unit in any of the hexes adjacent to the bridge when one side of it changes ownership to Allied, the chance that the bridge will blow is doubled.** Bridges which have been blown are not functional for

any purpose, and do not facilitate the movement of any units across the river.

Unlike many wargames, this means that the German player gets only **one** chance to blow each bridge, and the demolition attempt automatically occurs when one of the two hexes adjacent to the bridge changes ownership from German to Allied for the first time. Other than positioning an engineer unit adjacent to the bridge, there is nothing the German player can do to influence this process or increase the probability of destruction. The presence of more than one German engineer unit has no additional effect.

Bridges which have been blown may be repaired by Allied engineer units (including bridge units). German engineer units may repair infantry bridges, but not tank bridges. To repair an infantry bridge, move an engineer or bridge unit into either of the two hexes connected by the bridge. If the engineer unit is **not** in an enemy zone of control **and** if the engineer unit does not move, come under any type of attack, or conduct any other activities for **two** daylight game–turns, the bridge is automatically repaired at the end of the second turn. After that, the engineer unit is free to move away or conduct other activities. Bridges may also be repaired on night turns, but each night turn only counts as one–half of a game–turn towards the two–turn requirement. Note that engineer and bridge units engaged in repairing bridges accumulate fatigue normally (i.e., repairing a bridge **is** considered an activity – see "Fatigue").

The process for repairing tank bridges is identical to that given above for infantry bridges, **except** that the engineer unit **must be** one of the special British bridge units, **and** the bridge unit is removed from play when the repairs are complete.

Note that, for both types of bridges, there is no benefit to using more than one engineer or bridge unit to repair the same bridge simultaneously.

Engineers

In addition to repairing and building bridges, ferrying men, vehicles, and equipment on boats and rafts, engineer units also increase the chance that a bridge will be blown (i.e., destroyed) whenever enemy units move adjacent to it.

Permanent Ferries

There are a total of four permanent ferry crossings of major rivers located at various places on the map. These are signified by the letter "F" shown within a colored dot. Ferries are similar to tank bridges, except that the cost in movement points is greater for a ferry, and they may be used by German units only. All types of German units may cross these ferries. Ferries may never be captured or used by Allied units, and they are always destroyed the first time an Allied unit moves adjacent to them. Finally, once they are destroyed, ferries are removed from the map, and may never be repaired.

Engineers, Bridges and Ferrying - Velikiye Luki

In Velikiye Luki, the engineer units of both sides have very limited bridging and ferrying capabilities. This is due primarily to the winter weather conditions; even during light freeze conditions, which are in effect from the very beginning of the game, the rivers have a layer of ice several inches thick. This is sufficient to permit personnel to cross on foot, but also poses great difficulties for bridge building and ferrying operations. During hard freeze conditions, bridges are unnecessary even for vehicles. This is because the ice thickness has increased to twelve or more inches, which is sufficient to support the weight of heavy trucks and even tanks.

Engineers, Bridges and Ferrying - Utah Beach

In Utah Beach, the engineer units of both sides have very limited bridging and ferrying capabilities. This is due primarily to a historical shortage of assault boats and bridging equipment that was felt by both sides during the battle, and also to the nature of the terrain in the area.

In Normandy, both the American and German armies had only limited quantities of heavy bridging equipment. The year before, in 1943, the U.S. Army had removed most of the bridging equipment from its combat engineer battalions, and had concentrated it within special bridging units. Since the initial and most important mission of the Allied armies in Normandy was to gain a secure foothold on the European continent, and since extensive bridging capability was not deemed essential to that first phase of operations there, bridging units naturally had a lower priority on the shipping lists than combat units. As a result, only two light bridge companies were landed at Utah Beach

during the time period covered by the game. Other than to keep the pre–existing civilian bridges in service, their presence had very little effect on the fighting.

The German Army also concentrated most of its bridging capability into special bridge units, and none of them operated near the front line in Normandy. Most of the German bridging units were located on the Russian front after mid–1941; those that were still in France in 1944 were fully occupied with endless repairs to the rear–area transportation network, necessitated by Allied bombing.

A similar situation existed with regard to ferrying capability (i.e., assault boats). The official 1944 Table of Organization and Equipment (TO&E) for an American combat engineer battalion included 14 assault boats for river crossings. German engineer units had some boats too, although generally not as many. The boats (and some very limited light bridging capability) are included in the game as an increase in the combat odds of cross–river attacks when friendly engineer units are participating.

Finally, even if more bridging equipment *had* been available in the Utah area, it wouldn't have made that much difference, as most of the rivers in the area were flanked on one or both sides by "swamps" that were impassable to vehicles. Because of the width of these flooded zones (usually one or two miles), a new bridge wouldn't have done much good without a new causeway as well, and a construction project of *that* magnitude was not practical anywhere near the front line.

Movement Restrictions

British VIII and XII Corps - Market-Garden

The British VIII and XII Corps were assigned the missions of covering XXX Corp's right and left flanks (respectively) as XXX Corps advanced toward Arnhem. Historically, the units of VIII and XII Corps were not free to advance to Arnhem on their own. For that reason, there are several restrictions placed on these units in the game, which consist of the 7th and 11th Armored Divisions, and the 3rd and 15th Infantry Divisions. These restrictions are given below, and are always in effect **unless** the Historical Variant to the contrary is selected at the beginning of the scenario.

The British player may not assign movement or combat orders to any units of the VIII or XII Corps that would cause them to leave their assigned areas. To be more specific, the units of these two Corps may not move more than 35 hexes from the Meuse L'Escaut Canal (near the southern map edge).

In addition to these movement restrictions, the units of the VIII and XII Corps are restricted in their ability to re–attach to other British HQ's (see "Attachment"), and they may not be assigned a supply level higher than defensive.

German Velikiye Luki Garrison - Velikiye Luki

The German Velikiye Luki HQ and the units that begin the game attached to it constitute the "Velikiye Luki Garrison." The sole purpose of this garrison was to hold the fortified and strategically important city of Velikiye Luki. For that reason, there are several restrictions placed on the Velikiye Luki HQ and its attached units. These restrictions are given below, and are always in effect **unless** the Historical Variant to the contrary is selected at the beginning of the scenario.

The German player may not assign movement or combat orders to any units of the Velikiye Luki Garrison that would cause them to leave the immediate vicinity of Velikiye Luki. To be more specific, the units of the garrison are restricted to a maximum distance of 5 hexes from the center of Velikiye Luki.

In addition to these movement restrictions, the units of the Velikiye Luki Garrison are restricted in their ability to re–attach to other German HQ's (see "Attachment"), and the Velikiye Luki HQ may not be assigned a supply level higher than defensive unless the Air Superiority variants "Air Parity" or "Limited Axis Air Superiority" are in effect.

German 6th Luftwaffe Field Division - Velikiye Luki

The German 6th Luftwaffe Field Division was part of the 2nd Luftwaffe Field Corps, which was located just off the south edge of the Campaign Game map. This division is included in the game because it did fight within the Velikiye Luki map area; however, it was *not* part of either LIX Corps or Gruppe Woehler. Furthermore, by this stage of the war the Luftwaffe High Command had become increasingly reluctant to allow Army commanders too much control over its divisions, and preferred to keep Luftwaffe Corps together under Luftwaffe commanders.

Therefore, the 6th may not be assigned movement or combat orders that would cause it to leave its historical sector.

The 6th Luftwaffe Field Division is scheduled to arrive on the south map edge early in the Campaign Game. After its arrival, the German player may assign orders to the units of this division as usual, except that they are always restricted to the south–central portion of the map. Note that the 6th normally draws its supply from a separate stockpile located at its entry point, rather than from the railroad hexes that constitute the entry points and supply sources for other German units.

In addition to these movement restrictions, the units of the 6th are restricted in their ability to re–attach to other German HQ's (see "Attachment"). Furthermore, the 6th may not be assigned a supply level higher than defensive if the Air Superiority Variant "Limited Allied Air Superiority" is in effect.

German Cherbourg Garrison - Utah Beach

 The German Cherbourg HQ and the units that begin the game attached to it constitute the "Cherbourg Garrison". The sole purpose of this garrison was to defend the strategically important port of Cherbourg. For that reason, there are several restrictions placed on the Cherbourg HQ and its attached units. These restrictions are given below, and are always in effect **unless** the Historical Variant to the contrary is selected at the beginning of the scenario.

The German player may not assign movement or combat orders to any units of the Cherbourg Garrison that would cause them to leave the immediate vicinity of Cherbourg. To be more specific, the *mobile* units of the garrison are restricted to a maximum distance of 15 hexes from the center of Cherbourg. (The garrison also includes the "LAN" coastal artillery battery which is located 20 hexes west of the center of the city; this unit has a movement allowance of 0 and thus may never move at all.)

In addition to these movement restrictions, the units of the Cherbourg Garrison are restricted in their ability to re–attach to other German HQ's (see "Attachment"), and the Cherbourg HQ may not be assigned a supply level higher than defensive (see "Supply").

American 120th Infantry Regiment and 83rd Infantry Division - Utah Beach
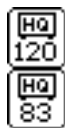
The American 30th and 83rd Infantry Divisions landed after D–Day on Omaha Beach and were part of the American XIX (19th) Corps, which in mid–June had responsibility for the area between Carentan and St. Lo (which is just off the southeast corner of the Campaign Game map). The 83rd and the 120th Regiment of the 30th are included in the game because they did fight within the Utah Beach map area; however, these units were *not* part of VII Corps, and so may not be assigned movement or combat orders that would cause them to leave their historical sectors.

The 120th Regimental Combat Team of the 30th Infantry Division is scheduled to arrive at the city of Isigny (on the east map edge) early in the Campaign Game, and two more battalions that are attached to it arrive later. After their arrival, the American player may assign orders to these units as usual, except that they are always restricted to the southeast portion of the map. Note that the 120th normally draws its supply from a separate stockpile located at Isigny, rather than from Utah Beach.

The 83rd Infantry Division is scheduled to arrive at the city of Isigny near the mid–point of the Campaign Game, and two more battalions that are attached to it arrive later. After their arrival, the American player may assign orders to these units as usual, except that they are always restricted to the southeast and south–central portions of the map. Note that the 83rd normally draws its supply from a separate stockpile located at Isigny, rather than from Utah Beach.

In addition to these movement restrictions, the units of the 120th and 83rd are restricted in their ability to re–attach to other American HQ's (see "Attachment").

Zones of Control
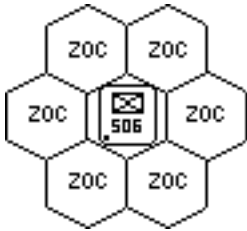
Most of the units in the Commemorative Collection™ games exert a "zone of control" into the six hexes adjacent to the unit. This zone of control represents the influence that a military unit has over nearby terrain due to observation and fire, as well as the extent to which a large unit is actually "spread out" into more than one hex. The effectiveness of a given zone of control is represented numerically by its "ZOC value." The game keeps track of the ZOC values for all units of both sides and their effects, and the ZOC values themselves never appear on the map or in the Unit Window. The following information is provided so that players can understand how the zones of control work, and so can make better decisions regarding the placement of their units.

ZOC values for a given unit and a given adjacent hex can range from a minimum of 0 to a maximum of 6; the higher the number, the more influence and control the unit is exerting into that hex. A ZOC value of 0 means the unit has no zone of control and thus no influence or control over that adjacent hex. A low ZOC value (1 or 2) indicates the unit has a weak zone of control, and can therefore observe portions of and place some fire into that adjacent hex. A high ZOC value (3 or more) indicates the unit has a strong zone of control, and is exerting significant influence and control over that adjacent hex. A ZOC value of 3 or more also means that, in real life, some portion of the unit would actually be located in that adjacent hex.

The ZOC values for each army are kept track of separately by the game, and a hex may simultaneously have a ZOC value for both sides.

In general, company–sized units exert a ZOC value of 1 into all six adjacent hexes, and battalion–sized units exert a ZOC value of 3 into all six adjacent hexes. There are five exceptions to these general rules:

1. Artillery units (regardless of size) exert a ZOC value of 1;

2. Divisional HQ units exert a ZOC value of 2;

3. Kampfgruppe/Regimental and Brigade HQ units exert a ZOC value of 1;

4.   All units (including divisional HQ units) exert a ZOC value of 1 while conducting strategic movement.

5.   Non–artillery, non–HQ battalions with an unmodified defense strength of less than 3 have a ZOC value equal to their unmodified defense strength.

The following modifications are made to **each unit's** ZOC value, when applicable:

1.   All units with a current morale of 7 or more have their ZOC values increased by 1;

2.   All units with a current morale of 3 or less have their ZOC values decreased by 1;

3.   All units with a current fatigue of 12 or more have their ZOC values decreased by 1.

The following ZOC value modifiers are applied once **per stack** of units, **not** for each individual unit, unless it is alone in the hex (all effects are cumulative):

1.   Units that are dug in have their ZOC values increased by 1;

2.   Units in a fortification, bunker, beach bunker, or fortress hex have their ZOC values increased by 2;

3.   ZOC values exerted into hexes containing **dug in** enemy units are decreased by 1;

4.   ZOC values exerted into hexes containing an enemy fortification are decreased by 2;

5.   ZOC values exerted into village and bocage hexes are decreased by 1;

6.   ZOC values exerted into city and forest hexes are decreased by 2;

7.   ZOC values exerted into bunker, beach bunker, or fortress hexes are decreased by 4;

8.   ZOC values exerted across either river or major river hexsides are decreased by 2, regardless of the presence of a bridge. In Velikiye Luki, whenever the ground condition is

light freeze, ZOC values exerted across rivers are decreased by 1 (regardless of the presence of a road);

9. ZOC values exerted "downhill" across a hill hexside are increased by 1;

10. ZOC values exerted "uphill" across either a hill or dike hexside are decreased by 1;

11. ZOC values are decreased by 1 on a well–lit night turn (defined as a full moon with clear, light or moderate overcast sky conditions);

12. ZOC values are decreased by 2 on a dark night turn (defined as anything else).

Note that when units are stacked together, the ZOC value exerted into an adjacent hex by the stack is (initially) the sum of the ZOC values exerted into that hex by all of the individual units in the stack. That sum may then be modified by one or more of the ten stack modifiers listed above.

When units or stacks in different hexes all exert ZOC's into the same hex, the total ZOC value in the center hex is the sum of the ZOC values being exerted from all of the adjacent hexes.

Effect on Movement

There is no movement point cost to enter an enemy zone of control, but once in it, an enemy zone of control tends to inhibit further movement. In addition to the terrain costs of the hexes the unit is leaving and moving to, it costs extra movement points to leave a hex that is in an enemy zone of control. In some circumstances, the presence of enemy zones of control may stop or prevent movement altogether.

When a unit enters a hex that has an enemy ZOC value of 3 or more, it stops and moves no further that turn (unless the enemy unit moves away). A unit conducting tactical movement continues to move (at an extra cost in movement points) after entering a hex with an enemy ZOC value of 1 or 2, but a unit conducting strategic movement stops upon entering **any** enemy zone of control. In all cases, the extra movement point cost to leave an enemy zone of control is the enemy ZOC value in that hex, unless the ZOC value exceeds one–half of the moving unit's total movement allowance. In that case, the cost to leave is one–half of the moving unit's movement allowance.

A unit does **not** carry out movement orders (tactical or strategic) that require it to move from a hex that contains an enemy ZOC value of 3 or more **directly into** another hex that also contains an enemy ZOC value of 3 or more that is exerted by the **same** enemy unit or stack. A unit may **not** use strategic movement to leave an enemy zone of control consisting of 3 or more ZOC points (and if leaving an enemy zone of control consisting of 1 or 2 ZOC points, it may not move directly into another enemy zone of control).

Effect on Supply

Supply lines may not be traced through enemy–occupied or enemy–controlled hexes or (in general) through hexes that contain enemy ZOC values greater than zero. However, supply lines **may** be traced through a hex containing a friendly unit, **even** if it is in an enemy zone of control.

Effects of Combat

Units that begin a turn in an enemy zone of control are **not** required to attack. However, if they do attack, their advance after combat may be hindered by the zones of control of nearby enemy units, just as ordinary movement would be. To minimize the negative effects of enemy zones of control on your movement and advances after combat, you should assign separate attacks against all enemy units whose zones of control might cause problems. These separate attacks **may** consist of artillery and/or air support only; there is no requirement that they include front–line ground units. To experienced wargamers, these extra attacks are known as "soak–off" attacks.

The reason for making these extra attacks is that in **every** non–interdiction attack with final odds of at least 1:4, the zones of control of the defending units lose their ability to block enemy movement. This effect begins when the attack occurs, and lasts for the remainder of the Execution Phase.

Units that are required to retreat into a hex that contains an enemy zone of control suffer extra losses, in addition to any that may be due to the combat itself. For each hex containing an enemy zone of control that the retreating unit must enter, its losses from that combat are increased by 25 percent. In the case of a retreating stack, **each** unit in the stack suffers these additional losses. The presence of friendly units and zones of

control along the retreat path has no effect on these additional losses (see "Retreats").

Stacking

More than one unit may be located in a given hex at the same time. However, such a "stack" may contain units from only one side; German and Allied units never stack together.

For most of the hexes on the map, the maximum "stacking limit" is 3 battalions, out of which a normal maximum of 2 battalions may use their full attack or defense strengths to participate in combat with enemy units in an adjacent hex. City and invasion beach hexes have a higher stacking limit of 4 battalions maximum, out of which 2 battalions plus 2 companies may use their full attack or defense strengths to participate in combat with enemy units in an adjacent hex.

For stacking limit purposes, each company counts as 1/3 of a battalion, and each HQ unit counts as 1 battalion.

These stacking limits are derived from the standard "frontages" (or widths of assigned sectors along the front line) of battalion–sized units in WWII. In World War II armies, official doctrines called for an infantry battalion to defend about a 1–kilometer segment of the front line. On the attack, the doctrines called for that same battalion to be responsible for less frontage, typically about half a kilometer. Real–life deviations from these official doctrines were almost always in the direction of *more* frontage being assigned to a unit, not less (since no army ever had enough men or battalions to do everything as it would have liked). It quickly follows that, based on doctrines as well as real experience, the normal maximum density of front–line combat units in WWII was one–half of a kilometer per battalion (or 2 battalions per kilometer).

If half a kilometer was the normal minimum frontage for a battalion, there was no corresponding maximum frontage. Given good visibility and prepared positions, most infantry battalions were able to adequately defend a frontage of 2–3 kilometers. Frontages greater than 3 kilometers per battalion normally required breaking the battalion down into companies and spreading them out, which was often done, but the result was little more than a picket or outpost line, easily breached by a concentrated enemy. In the game, the zones of control are designed to safely extend a battalion's frontage to 3 kilometers (i.e., the hex it's in plus the one on either side), under favorable visibility and terrain conditions.

The third battalion that is allowed in most hexes would (in real life) usually have to be located in the rear of the hex behind the other two battalions, since there would be no room for it on the front line. Therefore (despite orders or assigned actions), units stacked in excess of two–thirds of the stacking limit do **not** participate fully in combat unless:

1.   The extra unit is an artillery unit, in which case it may conduct fire missions normally;

2.   The hex is subject to an artillery, air, or naval attack, in which case that attack may affect any or all of the units in the hex;

3.   The combat results in an advance, in which case the entire stack may advance;

4.   The combat results in a retreat, in which case the entire stack must either retreat or suffer additional losses.

The stacking limit has no effect on zones of control; a unit that does not participate fully in combat due to the size of its stack still exerts its normal zone of control. This is because, in real life, such units would probably be "spread out" into adjacent hexes just like all the other units in the stack.

As explained in the section on terrain, beach bunkers and ordinary beach hexes have a lower stacking limit (2 battalions maximum) because most of the time these hexes represent fewer acres of ground. Cities have a higher stacking limit (4 battalions maximum) because the abundance of excellent cover there requires more men to attack or defend an area of a given size. Invasion beach hexes have a higher stacking limit (also 4 battalions) because of the very large American infrastructure that was located there. In each case, the same 2:1 proportion is used for the number of "front–line" vs. "rear–area" units allowed to be in the hex, with the result that, in a city hex, a maximum of 2 battalions plus 2 companies may use their full attack or defense strengths to participate in combat with enemy units in an adjacent hex.

In addition to the historically–based stacking limits described above, the game also has an upper limit of 9 different units (of any size) that may be located in each hex at once. This "software" limit is high enough so that, for almost all the hexes on the map, the historical stacking limit is reached first, even when the stack

is composed entirely of companies. However, in city hexes (where the stacking limit is 4 battalions) the software limit can take precedence over the historical stacking limit, with the result that the game limits stacks in city hexes to 9 total units. Our advice (which fortunately corresponds to good play) is to try to keep more battalions than companies in your larger stacks in city and invasion beach hexes.

The stacking limits in most WWII wargames apply only at the *end* of the movement phase, thus permitting players to ignore stacking limits during their movement. While that may be a reasonable and necessary convenience in a board wargame, it also provides players with an unrealistic degree of flexibility compared to real–life commanders. In reality, strict traffic control is a necessity for any large military operation, because moving units through each other too frequently or having too many of them in the same place at the same time causes serious problems (such as incredible traffic jams, increased vulnerability to enemy attack, slower and less efficient movement for everyone, etc.). For this reason, the rear area is always partitioned into sectors just like the front line, and generals throughout history have gotten into arguments with each other about whose units were assigned to use this road or that assembly area.

Unlike most other wargames, in the Commemorative Collection™ games the stacking limits apply and are enforced at **all** times during the game, including during the resolution of movement and combat. A unit may be assigned orders to move to a hex that is occupied by enemy units, blocked by enemy zones of control, or is already at the stacking limit, but if, when resolving the movement, the time comes for a unit to enter such a hex, its movement is delayed until it becomes possible (or until the turn ends). Therefore, players who plan the movement and stacking of their units and who try to conduct their operations in a realistic way fare better than those who don't. The latter may quickly find themselves suffering from an authentic case of "military gridlock."

Limited Intelligence and the "Fog of War"

"When a general has made no mistakes in war, it is because he has not been at it long." – Marshal Henri Vicompte de Turenne

Limited intelligence, which is usually defined as a lack of information about the enemy, is the single most important aspect of real combat operations. Unfortunately, it is also the exact thing that almost all traditional board wargames completely fail to simulate. Limiting information about the enemy is actually an age-old problem in wargaming, and even though a few games have attempted to address the problem, very few of them have gone far enough. Putting the traditional board wargame on a computer seemed to us to be the only way to combine operational and historical accuracy with a completely realistic "fog of war." Thus the V for Victory™ series was born.

Most wargamers are surprised at how much the game and their style of play change when they are placed in a realistic, information–poor environment. Uncertainties about the enemy's location, strength, and intent suddenly dominate the game. Most players automatically become much more cautious, and after just a short time their play tends to mirror historical movements and decisions much more closely than it did before. For example, when facing the unknown, maintaining a reserve is a very wise and useful thing to do. That's why no real commander *ever* places all his units on the front line unless he has no choice, but most wargames reward that kind of unrealistic play. Limited intelligence makes all the difference!

Enemy Units

If the "Limited Intelligence" Realism Option is selected at the beginning of the game, each player's map shows all of his units, but only those enemy units whose location becomes known during

the course of play. In most cases, the game provides information about enemy units gradually, rather than revealing everything about an enemy unit all at once. Usually, the first indication that an enemy unit is located in a given hex is the appearance there of a generic "side" unit, consisting of just a German cross, American or Russian star, or a British ensign. When you learn enough about one of these generic "side" units to determine what type of unit it is, it is replaced by a generic "type" unit. When you learn enough about it to know its true identity, the generic "type" unit is replaced by the actual unit. From that point on (provided that you continue to learn more about it), more and more data about that enemy unit is shown in the Unit Window when you click on it.

There are several factors (such as night, or the enemy unit moving away) that cause you to *lose* information about an enemy unit. When this happens, the above–mentioned sequence is reversed.

There are many factors that determine the amount of information available about an enemy unit. The number of game–turns it spends on the front line is important; the longer it's there and the more of your units that are near it, the more you tend to learn. The terrain makes a difference; a unit in bunker, city, village, or forest is harder to obtain information about than a unit in clear terrain. The type and size of the enemy unit and its characteristics can make a difference – larger units, units with a lower morale, and armored, artillery, and HQ units reveal more information about themselves than smaller and higher–morale infantry units. A unit that is moving reveals more information about itself than a unit that is stationary, and strategic movement reveals more information than tactical movement. A unit that is dug in reveals less information about itself, and a unit in a fortification reveals less still. Artillery and anti–aircraft units reveal information about themselves when they fire. Probing or assaulting an enemy unit usually reveals more information about it, and units with a higher morale and reconnaissance units usually do a better job of obtaining information about the enemy, and do not reveal as much about themselves. A unit with a high fatigue or disruption level reveals more information about itself and does not gather as much information as a unit that is not in one of those unfavorable states. Night and sky conditions also play a major role; the darker the night and/or the worse the sky conditions, the less the information that is obtained. And finally, the Air Superiority option selected at the beginning of the scenario is also a factor; the greater the degree of air superiority your side possesses, the more you learn about *all* the enemy's units, and the less the enemy learns about your units.

Friendly Units

One important aspect of real combat operations that is very rarely simulated in wargames is the lack of complete information about *your own* units. While any uncertainties over your own units are unlikely to be as great as those over the enemy's units, there are still some things about your own units that, in reality, you might not always know. For example, while you could always expect to know the correct identities of all of your own units and what they're *supposed* to be doing, you might *not* always know every detail about their current strength and situation, and in some cases you might not know their exact locations.

If the "Fog of War" Realism Option is selected at the beginning of the game, less information is available about your own units as their disruption and fatigue levels increase. This effect is greater for units that have a lower morale, for company–sized units, and for units that are in a state of no supply. When the disruption and fatigue levels of a unit decrease, full information is again available about it.

Control (or Ownership) of Terrain

Each hex on the map is "owned" or "controlled" by one side or the other; there is no "neutral ground" as far as the game is concerned. *However*, not all of this "ownership" information is available to the player (on purpose), and the information that is available does *not necessarily* represent the "real" or "correct" ownership. When "Show Hex Ownership" from the Options Menu is "on," the hexes that have a slightly lighter color are the ones which your staff assistant *believes* you control, and those that have a slightly darker color are those which he *believes* the enemy controls. On black and white monitors, enemy–controlled hexes are indicated by a small dot in the center of the hex.

A hex is *actually* controlled by a player if:

1.   One of his units was the last to occupy the hex, or

2.   One of his units (or stacks of units) was the last to exert an *uncontested* zone of control of at least 2 ZOC points into the hex.

In general, when a hex changes ownership, its new status lasts until the ownership is changed back by enemy action. However, in places where many of the front line hexes are **not** occupied by

units, the game may adjust the ownership of some of the hexes in order to "smooth" the front line in a realistic way. For example, if a unit advances by itself too far into enemy territory, the enemy territory "closes in" behind it (even in the absence of enemy units). This reflects the uncertainty that such a unit would feel with regard to its flanks and supply line.

As stated in the section on movement, hexes that are controlled by the enemy **may** be entered via strategic or automatic movement, but for each such hex entered, there is a possibility that the moving unit will stop and not complete its planned move. Units conducting strategic or automatic movement are also susceptible to **ambush** if they attempt to enter a hex that is occupied by an enemy unit or is in an enemy zone of control. (See "Strategic Movement.")

Supply lines may **not** be traced through enemy–controlled hexes.

German Brandenburg Commandos - Velikiye Luki

German "special forces" in WWII consisted of five regiments and several smaller units, all known as "Brandenburgers," because their original home barracks was in the city of Brandenburg. The Brandenburgers were not part of the German Army at all, but were the combat arm of the Abwehr, which was an independent foreign intelligence agency roughly equivalent to the modern American CIA. Although the Brandenburgers were officially organized into battalions and regiments, this was primarily for administrative purposes, and most of the time they operated as independent companies or platoons under the operational control of the Army. Brandenburg units consisted of specially–trained and selected volunteers, a large proportion of whom had lived and worked outside Germany for many years, and were fluent in the language and customs of the enemy on that particular front.   They specialized in commando raids and infiltration missions while wearing enemy uniforms and equipment (with German uniforms on underneath). Obviously these kinds of missions required the utmost secrecy, so there was very little German publicity or propaganda about them during the war, and this in turn caused a shortage of published information about them after the war. A typical Brandenburg mission involved the surprise seizure of an important enemy–held bridge, just prior to the arrival of a German armored spearhead. Brandenburg units successfully carried out dozens of such missions during the first two years of the war, many more than are commonly realized, and the

Brandenburg commandos deserve more of the credit than they have received for many of the most famous German victories.

A total of four Brandenburg companies fought in the Velikiye Luki area; one of them begins the Campaign Game in Novosokolniki, and the other three arrive as reinforcements late in the Campaign Game. The number "803" is shown on each of them, since they were all part of the 803rd Brandenburg Regiment. On color monitors, the center of each Brandenburg unit is brown, to signify its special infiltration abilities.

In the game, Brandenburg units have the ability to remain completely hidden from the Russian player in situations where any other type of German unit would be revealed. If the "Limited Intelligence" Realism Option is selected at the beginning of the game, Brandenburg units are not shown on the Russian player's map unless he has accumulated a *lot* of information about them – much more than is required to reveal the presence of any other German unit. This is true even if the Brandenburg unit is adjacent to one or more Russian units and/or is located deep in the Russian rear area. As long as they remain completely hidden from the Russian player, Brandenburg units are *always* in general supply, and do *not* have to trace a supply line to their HQ unit (see "Supply"). Brandenburg units also receive a special surprise attack bonus whenever they participate in an attack while completely hidden from the Russian player. This surprise attack bonus consists of an increase in the odds of the attack by 3, in addition to whatever other odds increases may be awarded to the German player due to morale, armor support, etc. (See "Combat.")

Finally, note that Brandenburg units may *not* be rebuilt using replacement points.

Random Variants

This is a feature which greatly increases uncertainty, limited intelligence, and realism. It randomly implements one or more of the Historical Options and Variants, without automatically revealing which variants are in effect. In order to make the best use of this feature, you should select the Random Variant for the **opposing** side, rather than your own. That way, you will not always know which units your opponent has, how strong his airpower is, etc. If you select the Random Variant for **both** sides in a two–player game, along with all the other Realism Options, you can expect *a lot* of uncertainty and surprise! For more information, see "Historical Options and Variants."

Morale

"Comrades! Exert yourselves so that we can lay the Hungarian capital at the great Stalin's feet! Fame and rewards await you; if you fail, I fear for your health." – Russian General Rodion Malinovsky, addressing his men on November 5, 1944

Each unit has a morale rating that is shown within the Unit Window whenever the unit is selected. Initial morale ratings range from 3 (for German "Ost" units) to 8 (for the best units of both sides). A unit's morale is a measure of the *quality* of the unit, independent of its size or strength. Units with a higher morale are more likely to carry out their orders and be successful in combat. All other factors being equal, units with a higher morale move and attack before units with a lower morale; they receive a favorable modification to their combat odds; their zones of control are more effective; if so ordered, they are more likely to stay in place and suffer additional losses rather than retreat; they are more likely to obtain information about enemy units; and they are less likely to reveal information to the enemy about themselves.

When applied to artillery, naval support, aircraft, morale is a measure of how *effective* their support is likely to be (i.e., how accurate and timely), independent of their total volume of fire. Therefore, even if it has a low fire strength, support from a high–morale (i.e., high–quality) artillery unit may turn the tide with "good shooting" that achieves results with relatively few rounds fired. On the other hand, support from a low–morale (i.e., low–quality) artillery unit can sometimes be counter–productive; one of the reasons for this is that the front–line unit may be depending on fire support that does not arrive on time or is inaccurate; another is the increased likelihood of casualties from "friendly fire."

There are a number of factors that can cause a unit's morale to increase or decrease during the game. These changes to a unit's morale are **not** permanent, and may be reversed by alleviating the condition responsible for the change. The effect of all the morale modifiers given below is cumulative, but a unit's current morale may never be decreased to less than 0. The maximum possible morale is 12, for a non–fatigued and non–disrupted elite unit in attack supply, defending a bunker hex.

The morale of aircraft varies; 4 (for most Russian aircraft), 5 (for German aircraft), 6 (for British aircraft and German Stukas). The

modifiers listed below do **not** apply to aircraft; their morale ratings remain constant throughout the game. All ships in the game have a morale of 7.

Increases to Morale

The following conditions increase a unit's morale:

1. The unit is in a state of attack supply. This increases its morale by 1.

2. Defending while dug in. This increases a unit's morale by 1.

3. Defending while in a fortification. This increases a unit's morale by 2.

4. Defending while in a bunker, beach bunker, or fortress hex. This increases a unit's morale by 3.

Note that the last three modifiers apply **only** when the unit is defending or being checked for surrender, **not** when it is attacking out of those hexes.

Decreases to Morale

The following conditions decrease a unit's morale:

1. Fatigue. When a unit's fatigue is between 6 and 11, its morale is decreased by 1. When its fatigue is 12 or more, its morale is decreased by 2.

2. Disruption. When a unit's disruption is between 6 and 11, its morale is decreased by 1. When its disruption is 12 or more, its morale is decreased by 2.

3. The unit is in a state of no supply. This decreases a unit's morale by 1. Note that this modifier does **not** apply when a unit is being checked for surrender.

Disruption

Units that are disrupted are in a state of disorganization, with squads, platoons, and even whole companies not where they're supposed to be and/or out of contact with each other and their headquarters. All front–line combat is disruptive, in that it always tends to reduce the efficient organization of a military unit to a less effective, chaotic level. Attacking units normally (but not always) become more disrupted than defending units, since the attacking units are more likely to be moving around, and the defending units are more likely to be in pre–planned, fixed positions. The disruption experienced by attacking units is especially pronounced at night.

Each unit has a disruption level that is shown within the Unit Window whenever the unit is selected. Disruption may vary from 0 to 15, with higher numbers representing a **worse** condition. Each point of disruption reduces a unit's attack, defense, armor, barrage, support, and antitank strengths, and its movement allowance by 3.3 percent of its current value, **after** any modifications due to strategic movement, supply, terrain, and field fortifications. When a unit's disruption reaches 6, its morale is decreased by 1, and when its disruption reaches 12, its morale is decreased by 2. Therefore, at the maximum disruption of 15, a unit's movement allowance and all of its various combat strengths are halved, and its morale is decreased by 2. A unit's disruption may not be increased to more than 15, or decreased to less than 0.

Ships and aircraft are not subject to disruption.

Increases to Disruption

Disruption may only be increased as a result of combat or the elimination of a unit's current HQ. Each of the following activities or events increases a unit's disruption by the amount indicated (all effects are cumulative):

1. Conducting an assault or an all–out assault on a daylight turn. This increases a unit's disruption by 1 (regardless of the outcome).
2. Conducting a probe on a well–lit night turn. This increases a unit's disruption by 1 (regardless of the outcome).

3.   Conducting an assault or an all–out assault on a well–lit night turn.   This increases a unit's disruption by 2 (regardless of the outcome).

4.   Conducting a probe on a poorly–lit night turn.   This increases a unit's disruption by 2 (regardless of the outcome).

5.   Conducting an assault or an all–out assault on a poorly–lit night turn.   This increases a unit's disruption by 3 (regardless of the outcome).

6.   Conducting a probe, assault, or all–out assault into a forest, or city hex. This increases a unit's disruption by 1 (regardless of the outcome).

7.   Each point of attack strength lost by an attacking unit increases its disruption by 1.

8.   Each point of defense strength lost in excess of one by a defending unit increases its disruption by 1.

9.   Each hex retreated by an attacking unit increases its disruption by 1.

10. Each hex in excess of one retreated by a defending unit increases its disruption by 1.

11. Each game–turn that a unit spends in a state of no supply because the HQ unit to which it was attached was eliminated increases its disruption by 1.

Note that for items 1 thru 6 above, what actually matters is the category in which the overall attack is resolved, not what kind of attack the individual unit is assigned to conduct. For example, if one unit is assigned to probe and two others are assigned to assault, all as part of the same attack, the attack is resolved as an assault and all three units suffer the disruption increase of an assault. (See "Combat.")

Decreases to Disruption

The **only** way to decrease a unit's disruption is for it to remain idle and not carry out any activity or participate in combat in any way during that game–turn. Each of the following decreases a unit's disruption by the amount indicated:

1.   Complete inactivity on a night turn while in an enemy zone of control. This decreases a unit's disruption by 1.

2.   Complete inactivity on a daylight turn while in an enemy zone of control. This decreases a unit's disruption by 2.

3.   Complete inactivity on a night turn while not in an enemy zone of control. This decreases a unit's disruption by 3.

4.   Complete inactivity on a daylight turn while not in an enemy zone of control. This decreases a unit's disruption by 6.

A unit may recover from disruption and fatigue simultaneously, although inactivity on a daylight turn is better for recovering from disruption. A unit **may** receive replacements while it is recovering from disruption and/or fatigue.

Fatigue

"Fatigue makes cowards of us all" – General George S. Patton

As we all know, human beings must get a certain amount of rest and sleep. If we don't or can't, our abilities gradually decline until, eventually, we become little more than zombies, almost incapable of useful activity. And so it is in the game. Players are free to assign movement or attack orders to their units every turn, day after day, if they so desire or feel they have to, but after a couple of days of that the units will be so fatigued that their abilities will be significantly reduced.

Each unit has a fatigue state that is shown within the Unit Window whenever the unit is selected. Greater numbers represent a **worse** condition; fatigue may vary from 0 (fresh and well–rested) to 15 (the walking dead). Each point of fatigue reduces a unit's attack, defense, armor, barrage, support, and antitank strengths, and its movement allowance, by 3.3 percent of its current value, **after** any modifications due to strategic movement, supply, terrain, and field fortifications. When the unit's fatigue reaches 6, its morale is decreased by 1, and when its fatigue reaches 12, its morale is decreased by 2. Therefore, at the maximum fatigue of 15, a unit's movement allowance and all of its various combat strengths are halved, and its morale is decreased by 2. A unit's fatigue may not be increased to more than 15, or decreased to less than 0.

Ships and aircraft are not subject to fatigue.

Increases to Fatigue

Each of the following activities or events increases a unit's fatigue by the amount indicated (all effects are cumulative):

1. Spending more than three–quarters of its initial movement allowance when conducting any type of movement. This increases the unit's fatigue by 1.

2. Participating in a probe attack now increases the unit's fatigue by 2. Units defending against a probe incur no increase in fatigue.
3. Participating in an assault, or any other attack type which is supported by artillery will result in a fatigue increase of 3.

4. Digging in or constructing a fortification. This increases the unit's fatigue by 1.

5. For engineer and bridge units, repairing a bridge increases the unit's fatigue level by 1.

6. Conducting any activity on a night turn (including any movement at all, digging in, constructing a fortification, repairing a bridge, or participating in combat in any way, as either an attacker or a defender). This increases a unit's fatigue by 2.

7. Ending any turn in a non–road swamp hex. This increases the unit's fatigue by 1.

8. Units defending against an air attack (unsupported by any ground attack) incur a fatigue increase of 2.

9. It should also be noted that in all instances artillery units incur 1 less fatigue point than other ground units.

Decreases to Fatigue

The **only** way to decrease a unit's fatigue is for it to remain idle and not carry out any activity or participate in combat in any way during that game–turn. Each of the following decreases a unit's fatigue by the amount indicated:

1. Complete inactivity on a daylight turn while in an enemy zone of control. This decreases a unit's fatigue by 1.

2. Complete inactivity on a daylight turn while not in an enemy zone of control. This decreases a unit's fatigue by 3.

3. Complete inactivity on a night turn while in an enemy zone of control. This decreases a unit's fatigue by 2.

4. Complete inactivity on a night turn while not in an enemy zone of control. This decreases a unit's fatigue by 6.

A unit may recover from disruption and fatigue simultaneously, although inactivity on a night turn is better for recovering from fatigue. A unit **may** receive replacements during game–turns when it is recovering from fatigue and/or disruption.

Field Fortifications

There are two types of field fortifications that units may construct during the game. Both of them benefit defending units only; there is no advantage to attacking out of a hex that contains a field fortification. A unit that is "**dug in**" has foxholes, weapons pits, pre–registered targets, pre–planned fields of fire, and a generally planned, prepared and organized defense. A "**fortification**" represents all these things plus minefields, some barbed wire, the beginnings of a trench system, and a few simple log and earth bunkers.

Each field fortification appears on the map as the uppermost "unit" in its hex. (These are really just markers, not units.) The "size" of a field fortification is indicated by the number at the bottom of the marker, and that size is the number of companies that may gain full benefit from being in the same hex with it. Each battalion equals 3 companies for this purpose, so a size 9 field fortification can "contain" 9 companies (or 3 battalions), which is the stacking limit for most of the hexes on the map.

Field fortifications may be enlarged by having the same or other units build another one in the same hex. If more than one unit is constructing a field fortification in a hex at the same time, only one "building" marker is shown. Larger field fortifications have no additional effect except that more units may benefit from them.

Field fortifications may never move, and benefit only friendly units in the same hex with them. Once the field fortification is completed, the unit that built it is free to conduct other activities and/or move away, and other friendly units are free to move in and benefit from it. However, a field fortification is automatically removed from the map at the **end** of any turn that there are no friendly units in the same hex with it.

Most defensive positions are actually directional in nature; i.e., they face a particular direction and provide maximum benefit to the defender only if he is attacked from that direction. Each field fortification therefore represents a planned and prepared defensive line which, in reality, would have a significant effect only if attacked from the "front." Although they are realistic, directional combat effects are typically found only in tactical–level games, and would be a considerable added complication in an operational–level games such as the V for Victory™ series. We

considered expanding the game system to include directionality and decided that, at this scale, it is not worth the trouble; very nearly the same result can be achieved in a much simpler way. V for Victory™ games assume that, when initially built, a field fortification faces the enemy, or at least the direction the enemy is most likely to approach from. As long as the position is continuously occupied, that directionality is preserved, and the probability that the field fortification will be beneficial remains high. However, if a position is ever captured or abandoned, its original directionality is presumed to be lost, and whatever remains of the field fortification is assumed to be facing the wrong way, or located in the wrong place within the hex, to be of much use to later occupants of the hex. This argument applies especially to captured positions.

Digging In
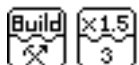
All units may dig in **except** those that are adjacent to an enemy unit, or those that are located in a located in a swamp, bunker, beach bunker, or fortress hex. It normally requires **two** turns to dig in. To begin, select the unit and press the letter "F" on the keyboard. (Or, you can open the Command Box for that unit, make sure the unit is assigned one of the three "defend" options, click on the "dig in" symbol, and then close the Command Box.) This causes a "digging in" marker to appear as the top unit in that hex on the map. To finish digging in, "dig in" orders must be assigned **again** on the next game–turn; as a convenience, the game automatically does that for you, so that once a unit begins to dig in, it continues to do so until you change its orders. If **you** assign orders other than "dig in" on the next turn, the process is either interrupted or canceled. If the unit moves out of the hex, the process is canceled, and the digging in marker is removed from the map. The process is merely interrupted (and may be completed on a later turn) if the unit is attacked by artillery/naval/air (with no enemy units adjacent), participates in combat as an attacker or defender without leaving the hex, if the unit remains inactive in order to recover from fatigue or disruption or to receive replacements, or if the unit is an artillery unit and conducts a fire mission. If an enemy unit moves adjacent to a unit in the process of digging in, the process is canceled and the "digging in" marker is removed from the map.

When dug in units are defending in a hex that contains a dug in marker large enough for all of them, it multiplies their defense strength by 1.5, their antitank strength by 1.25, increases their morale by 1, and halves the strength of incoming

artillery/naval/air attacks. If the dug in marker is *not* large enough to contain all the units in the hex, it multiplies their defense strength by 1 + (0.5 x (marker size/stack size)), it reduces the strength of incoming artillery/naval/air attacks by a proportional fraction, and it has no effect on the antitank strength or the morale of the defending units.

The advantages of being dug in do **not** apply to units that are conducting probes, assaults, all–out assaults, or any type of movement.

In Velikiye Luki, during hard freeze and deep snow ground conditions, non–engineer units may dig in **only** in village and city hexes. Engineer units may still dig in when they are in clear terrain or forest hexes, but this takes twice as long as normal (i.e., four game–turns). Both engineer and non–engineer units may dig in when they are in lake hexes **only** during deep snow conditions (when the lake becomes clear terrain for all purposes).

Fortifications

Fortifications are constructed in the same manner as digging in, except that the **first** fortification marker in a hex may be built only by an **engineer** unit, and constructing the first fortification in a hex normally requires **four** turns. Like digging in, a fortification may not be built or enlarged in a bunker hex, or in a hex that is adjacent to an enemy unit. Unlike digging in, a fortification **may** be built or enlarged in a swamp hex, but this takes twice as long as normal (i.e., eight game–turns).

When units are defending in a hex that contains a fortification large enough for all of them, it multiplies their defense strength by 2, their antitank strength by 1.5, increases their morale by 2, and halves the strength of incoming artillery/naval/air attacks. If a fortification is *not* large enough to contain all the units in a hex, it multiplies their defense strength by 1 + (fortification size/stack size), their antitank strength by 1 + (0.5 x (fortification size/stack size)), it halves the strength of incoming artillery and air attacks, and it raises the morale of the defending units by 1.

Like being dug in, these advantages do **not** apply to units that are conducting probes, assaults, or any type of movement.

In Velikiye Luki, during hard freeze ground conditions, engineer units may still construct fortifications in all types of terrain except lakes, but this takes twice as long as normal (i.e., eight

game–turns). Although fortifications may not be constructed on lake hexes during hard freeze conditions, they *may* be constructed on lake hexes during deep snow (when the lake becomes clear terrain for all purposes). This also requires eight game–turns.

Note that in Velikiye Luki, for the purpose of constructing field fortifications, construction battalions **are** engineer units.

Digging In and Fortifying in the Same Hex

A hex may not contain a completed dug in marker if it also contains a completed fortification, and vice versa. Both may be **under construction** at the same time (in which case the fortification is the one that appears), and either may be under construction in a hex that contains a completed one of the other (in which case whichever one is completed is the one that appears).

When a fortification is completed in a hex that already contains a completed dug in marker, the size of the newly–completed fortification is immediately increased by one–half of the size of the dug in marker (fractions rounded down), and the dug in marker is removed. For example, if a hex contains a completed dug in marker of size "3," and a building fortification of size "1," when the fortification is completed, it becomes size "2," and the dug in marker is removed.

Units **may** be assigned to dig in a hex that already contains a completed fortification. However, in this case the dug in marker never appears on the map; when the units are finished digging in, the already–complete fortification marker is enlarged instead. The amount that the fortification is enlarged by depends on the size of the unit that is digging in; a company–sized unit enlarges the size of the fortification by 1, and a battalion–sized unit enlarges the size of the fortification by 2. For example, if a hex contains a completed fortification marker of size 1, and a battalion–sized unit digs in the hex, when it is finished digging in, the fortification marker is enlarged from size 1 to size 3. This process may be repeated to enlarge the fortification to size 5, and so on.

Attachment and Subordination

The purpose of the provisions for attachment and subordination is to increase the realism of the game by putting the players under *some* of the restrictions of a real military command structure. Many wargames ignore this important topic, with the result that players often develop an incorrect sense of what is possible in the real world. *Real* military commanders almost never enjoy the large degree of flexibility that most wargames provide to their players. This is especially true with regard to such things as sudden changes of plan, coordinating the actions of many different units, reorganizing those units, and dealing with the wishes and actions of superiors, peers, and subordinates.

Attachment

In order to provide a more realistic simulation of supply and artillery support, each unit in V for Victory™ games must always be "attached" to a headquarters unit. When a unit is attached to a particular HQ (a divisional HQ, for example), it functions as a part of that division for all purposes. **Except for units that are attached to a Corps HQ, players may change attachments only during the Planning Phase of each 6:00 AM (8:00 AM in Velikiye Luki) game–turn**. Units that are attached to a **Corps HQ** may be re–attached to another HQ **in that same Corps** during any Planning Phase, but other attachment changes may be performed **only** during the 6:00 AM (8:00 AM in Velikiye Luki) Planning Phase.

During the Planning Phase of each 6:00 AM (8:00 AM in Velikiye Luki) game–turn, players are free to reattach units among their HQ's as they see fit. However, each HQ has an upper limit on the total number of battalions that may be attached to it at the same time.

These limits apply to all games but Utah Beach:

Brigade and Divisional HQ's: 7 battalions per strength point of unmodified defense strength currently possessed by the HQ unit.

Corps HQ's and Army HQ's: 4 battalions per strength point of unmodified defense strength currently possessed by the HQ unit.

In Utah Beach these limits are:

American non–Corps HQ's: 8 battalions per strength point of unmodified defense strength currently possessed by the HQ unit.

German non–Korps HQ's: 7 *mobile* battalions per strength point of unmodified defense strength currently possessed by the HQ unit.

Corps HQ's of both sides: 4 *mobile* battalions per strength point of unmodified defense strength currently possessed by the HQ unit.

For the purposes of these limits, each company–sized unit counts as 1/3 of a battalion, and the HQ units themselves do not count as part of the total. Note that these attachment limits may actually be exceeded by up to two companies, **if** the companies were attached to the HQ prior to the attachment of the last battalion. Also, German **static** units (i.e., those with a movement allowance of 0) do **not** count against the attachment limits of German HQ's.

The limit on the number of units that may be attached to a given HQ is actually enforced only when you are *changing* attachments. This is so that losses suffered by an HQ unit, or the arrival or reinforcements, do not force an immediate change in attachments. If an HQ unit is already at its attachment limit, its "Attach" button on the HQ Sidebar does not activate.

Within the above limits, a unit may be attached to **any** friendly HQ, regardless of the unit's official name or historical attachment. For example, if the German player wishes, he is free to reattach the 1st Battalion, 1222nd Infantry Regiment (officially part of the 59th Infantry Division) to the 9th SS Panzer Division. If he does this, the 1st Battalion, 1222nd Regiment becomes part of the 9th SS Panzer Division for *all* purposes (*except* for regimental integrity, and *except* that the name of the battalion does not change when shown within the Unit Window).

To change a unit's attachment, first go to the HQ Sidebar and select the HQ that you wish to re–attach the unit to (i.e., the HQ that will be the **new** HQ for the unit in question). Then go to the map (or the Unit Window, if the unit is stacked beneath another one) and click on the unit that you wish to re–attach. At this point the "Attach" label appears on the button in the sidebar if the re–attachment is permissible; clicking on it causes the selected unit to be re–attached to the HQ shown at the top of the sidebar.

If you re–attach any units **after** you have allocated supply to your HQ's, the supply tonnage required for the affected units and HQ's may differ significantly from what was already allocated. If the most recent re–attachment results in insufficient supply tonnage being available in the stockpile for the current HQ to be at its previously allocated supply level, its supply level is reduced.

Note: after you have completed the Planning Phase of the 6:00 AM (8:00 AM in Velikiye Luki) game turn, you may **not** change your attachments again until the **next** 6:00 AM Planning Phase (six game–turns in the future), **except** that units attached to a **Corps HQ or Army HQ** may be re–attached to any other HQ **in that same Corps or Army** (subject to attachment and supply limits). Information on current attachments may still be called up for reference at any time by using the HQ Sidebar.

Subordination

In order to provide a more realistic simulation of military command structures, especially with regards to rear–area supply lines, **each brigade and divisional HQ unit must always be "subordinate" to a corps or army–level HQ**. When a unit is subordinate to a particular corps HQ, for example, it functions as a part of that corps for all purposes, including supply lines. This is especially significant for the Russians in Velikiye Luki, whose supply lines must normally include their corps HQ's.

During the Planning Phase of each 6:00 AM (8:00 AM in Velikiye Luki) game–turn, players are generally free to change subordination among their HQ's as they see fit. However, each corps HQ has an upper limit on the number of divisional HQ's that may be subordinate to it at the same time. This limit is equal to **two** divisions per strength point of unmodified defense strength currently possessed by the corps HQ unit. For the purposes of this limit, each brigade HQ counts as one–third of a division. For example, in Market-Garden, if the British XXX Corps HQ has a current unmodified defense strength of 4, then it can have up to 8 divisional HQ's subordinate to it, or 7 divisional HQ's and 3 brigade HQ's, etc. Note that these subordination limits may actually be exceeded by up to two brigade HQ's, **if** the brigade HQ's were subordinate to the corps HQ prior to the subordination of the last division.

Within the above limits, a brigade or divisional HQ may be subordinate to **any** friendly corps HQ, regardless of the unit's official name or historical attachment. (Exception: HQ's whose

current higher HQ is not on the map may not change subordination.)

The limit on the number of HQ's that may be subordinate to a given corps or army HQ is actually enforced only when you are *changing* subordination. This is so that losses suffered by an HQ unit, or the arrival or reinforcements, do not force an immediate change in subordination. If a corps or army HQ is already at its subordination limit, its "Attach" button on the HQ Sidebar does not activate when a divisional or brigade HQ is selected as the current unit on the map.

To change the subordination of a brigade or divisional HQ, first go to the HQ Sidebar and select the corps or army HQ that you want to subordinate the brigade or division to (i.e., the corps or army HQ that will be the **new** higher HQ for the unit in question). Then go to the map (or the Unit Window, if the unit is stacked beneath another one) and click on the brigade or divisional HQ unit. At this point the "Attach" label appears on the button in the sidebar if the subordination is permissible; clicking on it causes the selected brigade or divisional HQ unit to be made subordinate to the higher HQ shown at the top of the sidebar.

Note: after you have completed the Planning Phase of the 6:00 AM (8:00 AM in Velikiye Luki) game turn, you may **not** change subordination again until the **next** 6:00 AM (8:00 AM in Velikiye Luki) Planning Phase (six game–turns in the future). Information on current subordination may still be called up for reference at any time by using the "show" button on the HQ Sidebar.

Attachment Restrictions

British VIII and XII corps - Market-Garden

The British VIII and XII Corps HQ's and the units that begin the game attached to them constitute the flank protection for XXX Corps. These units consist of the 7th and 11th Armored Divisions, and the 3rd and 15th Infantry Divisions. The sole purpose of these units was to protect XXX Corp's flanks, as well as the strategically important Highway 69. Therefore, the units in these two Corps may not re–attach to another HQ unit outside that same Corps, and other British units that are not part of one of these Corps may not re–attach into one of these Corps. In addition, the units of VIII and XII Corps may not be assigned a supply level higher than

defensive. Finally, the units in these two Corps are subject to movement restrictions which prevent them from leaving their historical areas of operation.

German Velikiye Luki Garrison - Velikiye Luki

The German Velikiye Luki HQ and the units that begin the game attached to it constitute the "Velikiye Luki Garrison." The sole purpose of this garrison was to hold the fortified and strategically important city of Velikiye Luki. Therefore, the units that comprise the garrison may not re–attach to another HQ unit, and other German units that are not part of the garrison may not re–attach to the Velikiye Luki HQ. In addition, the Velikiye Luki HQ may not be assigned a supply level higher than defensive unless the Air Superiority Variants "Air Parity" or "Limited Axis Air Superiority" are in effect. Finally, the units that comprise the garrison are subject to movement restrictions which prevent them from leaving the immediate vicinity of Velikiye Luki (see "Movement").

German 6th Luftwaffe Field Division - Velikiye Luki

The units of the 6th Luftwaffe Field Division may **never** be re–attached to a different HQ unit, and other German units may not re–attach to the 6th Luftwaffe Field HQ. The 6th may not be assigned a supply level higher than defensive if the Air Superiority Variant "Limited Allied Air Superiority" is in effect. Finally, the units of the 6th are subject to movement restrictions that prevent them from leaving their historical sector (see "Movement").

German Cherbourg Garrison - Utah Beach

The German Cherbourg HQ and the units that begin the game attached to it constitute the "Cherbourg Garrison". The sole purpose of this garrison was to defend the strategically important port of Cherbourg. Therefore, the units that comprise the garrison may not re–attach to another HQ unit. In addition, the Cherbourg HQ may not be assigned a supply level higher than defensive, and the units that comprise the garrison are subject to movement restrictions that prevent them from leaving the immediate vicinity of Cherbourg (see "Movement").

Other German units that are not part of the garrison but are within 15 hexes of the center of Cherbourg may attach to and re–attach from the Cherbourg HQ freely, subject to the overall limit

on the number of units that may be attached to the Cherbourg HQ. However, while they are attached to the Cherbourg HQ, such extra units **are** subject to the same movement and supply restrictions as the rest of the garrison.

American 120th Infantry Regiment and 83rd Infantry Division - Utah Beach
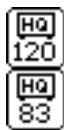
The units of these divisions and the XIX Corps troops that are attached to them may **never** be re–attached to a different HQ unit. Other American units that are not part of these divisions, but are located within the proper area on the map, may attach to and re–attach from these HQ's freely, subject to the overall limit on the number of units that may attach to a given HQ. However, while they are attached to one of these HQ's, such extra units **are** subject to the same movement restrictions as the rest of the units in that division (see "Movement").

Supply

"The battle is fought and decided by the Quartermaster before the shooting begins" – Field Marshal Erwin Rommel

The strength and capabilities of a military unit depend on many things, but one of the more important is supply – the constant flow of ammunition, food, fuel, and a host of other items. Without supply, an army cannot move or fight. Real armies, therefore, have always devoted considerable manpower and attention to logistics, which is the "theory and practice" of supply.

Supply quantities in Commemorative Collection™ games are measured in tons. These tonnage numbers are not arbitrary; they are based as closely as possible on actual logistical data from WWII. In addition to permitting a detailed, realistic accounting of supply allocations and expenditures, the tonnage numbers are also used to determine which of five possible supply states each unit is in. The five supply states in the game are: attack, general, defensive, minimal, and no supply. A description of the meaning and effects of each are given below.

Attack supply represents double supply – twice as much as would normally be allocated. Units in attack supply therefore have an abundance of food, gasoline, and spare parts, plus "ammo to burn." As a result, their attack, defense, armor, and antitank strengths are all increased by 50 percent, and their morale is increased by one.

General supply represents a normal or full supply allocation; units in general supply have (or can get) everything they need.

Defensive supply represents a reduced supply allocation. Although units in defensive supply are receiving less of everything than they should, the quantities of food, gasoline, and ammo are adequate for defensive operations. Units in defensive supply have their attack and armor strengths halved, but their defense and antitank strengths remain normal. Armored and motorized units have their movement allowances halved.

Minimal supply represents a subsistence–level supply allocation. Units in minimal supply are not receiving what they need for heavy or prolonged combat; their attack strength is quartered, and their defense, armor, and antitank strengths are all halved.

Armored and motorized units have their movement allowances reduced to one–third of normal.

No supply represents, for all practical purposes, just that. Whatever food, gasoline, and ammo the men and vehicles have with them at the moment is all there is. Units in a state of no supply have their attack and armor strengths quartered, their defense and antitank strengths halved, and their morale is decreased by one. Armored and motorized units have their movement allowances quartered. Furthermore, units that remain in a state of no supply eventually surrender.

You will notice when playing V for Victory™ games that the unit data window will have the unit name on top, followed by its type, with its HQ attachment on the bottom. Between it's type and HQ there is now a colored bar - the left half of the bar indicates the unit's current supply level assigned by the HQ (Attack, General, Defensive, Minimal, NONE) while the right half shows his supply state (In Supply, Out 1, Out 2, Out 3, Out 4). The colors you will see are green, blue, orange, red, black, with black being the worst. Systems with B&W monitors will see a gray scaled effect with light gray being more in supply and black being less in supply.

German Supply Delivery

In Normandy, German divisions needed 800–1000 tons per day to consider themselves fully supplied, and often operated successfully with much less. However, the interdiction effect of Allied air power limited average German supply deliveries to no more than 200 tons per division per day, which (depending on the division) usually corresponded to minimal supply. In game terms, very few (if any) German units in Normandy were ever in general supply. Most of them alternated between defensive and minimal supply, spending more and more time in minimal supply as the campaign wore on. Lack of supply was the primary reason why a major German offensive against the Allied beachhead in Normandy never developed. The German generals *wanted* to go over to the offensive very badly, and they had the necessary divisions to do so; many of these divisions were the same ones that, six months and numerous defeats later, *still* managed to breach the American line in the Ardennes. However, unlike the Ardennes, the German supply situation in Normandy was just too unfavorable, and what would otherwise have been a mighty (and perhaps unstoppable) German force was reduced to holding on by its fingertips from a lack of supply.

During the time period of Market-Garden, most German units remaining received adequate quantities of supply. This was because they had fallen back toward major supply dumps much closer to Germany, and were no longer hampered by long supply lines which could be interdicted by Allied airpower and partisans. Another reason was that, unlike the campaign in France, American and British airpower was not used effectively in Operation Market–Garden. This was because of a deliberate Allied decision not to conduct tactical air interdiction near the battle area, out of a fear of mistaken air attacks.

During the time period of Velikiye Luki, most German units remaining received adequate quantities of supply. This was because, once the rail lines were converted to German gauge, the only significant threat to German supply lines was from the partisans. Unlike American and British airpower, Russian air attacks had only a small effect on the German supply situation. Most Russian air missions were flown against targets which were *very* near the front line; even when they had local air superiority, Russian aircraft almost never flew more than 20 miles into the German rear!

The Germans were able to maintain a small but useful air supply capability on the Russian front, which they frequently had to rely on. The ill–fated attempt to supply the entire Sixth Army at Stalingrad by air was the largest and most well–known of the failures, but there were some successes. Several smaller pockets *were* adequately supplied by air, which enabled them to hold out for long periods of time, even a whole winter, and they were eventually rescued. Two examples of the latter were Cholm and Demyansk, both just north of the Velikiye Luki map area.

In the case of Velikiye Luki, an attempt was made to supply the besieged garrison by air, but practically all existing German transport aircraft were fully occupied by the much larger encirclement at Stalingrad. Therefore, less–suitable twin–engine bombers and Stukas had to be employed to fly supplies into Velikiye Luki, and these supplies had to be dropped by parachute, because the pocket lacked a suitable airfield. Due to the light loads the few available aircraft could carry, the bad flying weather, and the lack of suitable landing fields and drop zones, aerial supply deliveries to Velikiye Luki never came close to what the garrison required on a daily basis.

Each game–turn, the tonnage of German supply that arrived during the previous turn is calculated in the following manner:

1. A base tonnage is calculated, which includes a slight effect from Allied strategic air interdiction in northern Germany, and therefore depends on which Air Superiority Option is selected at the beginning of the game.

2. Depending on the Air Superiority option and Allied air allocations, the base tonnage may be further reduced by Allied tactical air interdiction away from the immediate battle area (which in turn depends partially upon the sky conditions the previous turn).

3. The tonnage is randomly increased or reduced by up to 16 percent, to provide for some uncertainty and short–term variability.

The final number resulting from steps 1–3 above is the total tonnage of German supply received during the previous game–turn.

In Velikiye Luki, supply for the Velikiye Luki HQ and the units attached to it is handled separately from the turn–by–turn delivery which sustains the rest of the German force. The Velikiye Luki HQ represents a special fortress command that begins the game with a large stockpile of supply reserved for its own use. (Included as part of the Velikiye Luki stockpile are the limited supply deliveries to Velikiye Luki that took place via air drop.) Other German HQ's may not draw supply from the Velikiye Luki stockpile unless/until they are unable to trace a supply line to a German supply source on the map edge. If the Velikiye Luki HQ exhausts its own stockpile, it must trace a supply line to a German supply source on the map edge, and draw supply from the common stockpile like any other German HQ (see "Supply Lines" below).

In Utah Beach, very few (if any) German units in Normandy were ever in general supply. Most of them alternated between defensive and minimal supply, spending more and more time in minimal supply as the campaign wore on. Lack of supply was the primary reason why a major German offensive against the Allied beachhead in Normandy never developed. The German generals *wanted* to go over to the offensive very badly, and they had the necessary divisions to do so; many of these divisions were the same ones that, six months and numerous defeats later, *still* managed to breach the American line in the Ardennes. However, unlike the Ardennes, the German supply situation in Normandy was just too unfavorable, and what would otherwise have been a

mighty (and perhaps unstoppable) German force was reduced to holding on by its fingertips from a lack of supply.

Although there is less data available on the German logistical situation in Normandy, what exists is still sufficient for an accurate simulation. Total German supply deliveries to Normandy (including the Omaha and British sectors) averaged around 3,000 tons per day in June; that was only 43 percent of the 7,000 tons per day that the German commanders said they needed in order to conduct a proper defense, and far short of the 14,000 tons per day that would have been required for a major, sustained offensive. Virtually all the German supply that did arrive in Normandy ultimately got there by truck or horse cart, because the entire French rail net west of Paris was rendered useless by constant Allied air attacks. The Luftwaffe did make some night supply drops into Cherbourg and Carentan, but the total tonnage delivered proved to be negligible (only 18 tons into Carentan the night of June 11–12, and 188 tons into Cherbourg between June 20 and 30). The Kriegsmarine (Navy) also delivered several hundred tons to Cherbourg with submarines and torpedo boats.

Of the 3,000 tons per day that was actually delivered to Normandy, only about 38 percent (or some 1,140 tons per day) went to the Utah sector. The tonnage of German supply available is calculated in the same manner as noted above.

Supply for the Cherbourg HQ and the units attached to it is handled separately from the turn–by–turn delivery and common stockpile used by the rest of the German force. The Cherbourg HQ represents a special fortress command that begins the game with a large stockpile of supply reserved for its own use. (Included as part of the Cherbourg stockpile are the special supply deliveries to Cherbourg that took place via air drop and sea transport.) Other German HQ's may not draw supply from the Cherbourg stockpile unless/until they are unable to trace a supply line to a road hex on the south map edge. If the Cherbourg HQ exhausts its own stockpile, it must trace a supply line to a road hex on the south map edge and draw supply from the common stockpile like any other German HQ (see "Supply Lines" below).

Commonwealth Supply Delivery- Gold • Juno • Sword

British supply requirements were similar to comparable German units, except for artillery. British artillery units required twice as much ammunition, fuel, and other items as their German

counterparts, because they had twice as many men and guns. Overall, an average British or Canadian division required slightly over 300 tons of supply per day for normal offensive operations, and around 250 tons per day for defensive operations. These tonnages were lower if the division was below strength, and higher if the division had extra units attached.

During the game, an approximate total of 293,600 tons of supply was delivered to the Commonwealth in the GOLD • JUNO • SWORD sector. Just over 99 percent of that arrived by sea and was unloaded at either Gold, Juno, or Sword Beaches and less than one percent (or some 1,000 tons) arrived by air. The combined average of GOLD • JUNO • SWORD, and air supply deliveries was 11,290 tons per day, a 20 percent shortfall from the planned average of 14,000 tons per day. The shortfall was due primarily to the great storm on June 19–22. Sporadic German artillery fire against the beach (which lasted all through June) and German night air raids, of 50 to 100 planes at a time, also had some effect.

Allied Supply Delivery - Market Garden

British supply requirements were similar to comparable German units, except for artillery. British artillery units required twice as much ammunition, fuel, and other items as their German counterparts, because they had twice as many men and guns. Overall, an average British division required slightly over 300 tons of supply per day for normal offensive operations, and around 250 tons per day for defensive operations. These tonnages were lower if the division was below strength, and higher if the division had extra units attached. The British Army had a tendency to attack only after a long period of preparation and buildup of strength, replacements and supply, so the initial British supply stockpile is large. Finally, at this point in the war the Luftwaffe was beginning to re–assert itself as the front lines approached Germany, so there may be some effect on British supply delivery due to German air interdiction.

The Allies had a large air supply capability on the Western front, and during Operation Market–Garden they had no trouble keeping their airborne formations in defensive supply by air. Air supply during this battle arrived either by parachute or glider.

Each game–turn, the tonnage of Allied supply that arrived during the previous game–turn is calculated in the following manner:

1.   A base tonnage is calculated, which may include some effect from German air interdiction, and therefore

depends on which Air Superiority Option is selected at the beginning of the game.

2. Depending on the Air Superiority option and German air allocations, the base tonnage may be further reduced by German tactical air interdiction (which in turn depends partially upon the sky conditions the previous turn).

3. The tonnage is randomly increased or reduced by up to 16 percent, to provide for some uncertainty and short–term variability.

The final number resulting from steps 1–3 above is the total tonnage of Allied supply received during the previous game–turn.

Russian Supply Delivery - Velikiye Luki

Very little, if any, hard data has been published regarding Red Army supply allocations, requirements and deliveries. It is known that the Red Army had a smaller and shorter logistical "tail" than any other major combatant of WWII, with fewer men in the rear to supply each man on the front. Most Red Army units were also short of both motor vehicles and horse drawn transport, especially for the purpose of hauling supplies, and therefore were tied more closely to their railheads than comparable units in other armies. Another effect of the general lack of transport was that it took the Red Army a long time to build up the necessary supply before each major offensive, especially artillery ammunition, and (if things went well) not very long to use it up or outrun its short supply lines. On the other hand, Red Army units "lived off the land" somewhat more than the Germans did, and did not normally require as much fuel, or as many spare parts and other miscellaneous items.

All things considered, it seems safe to assume that a given Red Army unit normally required less supply than a comparable German unit with the same number of men and type of weapons. In the game, a full–strength Russian rifle division requires around 200 tons of supply per day for normal offensive operations, and about half that for defensive combat. As expected, the tonnage required is somewhat lower if the division is below strength (as most Red Army rifle divisions usually were), and somewhat higher if it has extra artillery or other support units attached. The tonnage of Russian supply available is calculated in the same manner as for the British, noted above.

American Supply Delivery - Utah Beach

Officially, an average American infantry division in general supply (and with typical corps–level and rear–area units attached) required approximately 1,600 tons of supply per day. Actual requirements were usually somewhat less than that, especially early in the Normandy campaign, before all the corps–level and rear–area units arrived. Although the American VII Corps was not able to keep all of its units in general supply all the time, that was foreseen and planned for, and American units in Normandy never really suffered from a lack of supply. In game terms, most of them alternated equally between general and defensive supply, as required by the current situation in their sector. From time to time, some American units were probably in attack supply for a day or two. Very few (if any) American units in Normandy were ever reduced to a state of minimal supply.

During the time period covered by the game, an approximate total of 141,450 tons of supply was delivered to the U.S. Army in the Utah sector. Just under 90 percent of that arrived by sea and was unloaded at Utah Beach; another 9 percent came out of the tonnage that arrived by sea at Omaha Beach (this is what is used by the units that enter the map at Isigny), and approximately one percent (or some 1,500 tons) arrived by air. The combined average of the Utah Beach and air deliveries was 4,756 tons per day, an 11 percent shortfall from the planned average of 5,338 tons per day. The shortfall was due primarily to the great storm June 19–22, although sporadic German artillery fire against the beach (which lasted until June 12) and German night air raids also had some effect.

Each game–turn, the tonnage of American supply that arrived during the previous game–turn is calculated in the following manner:

1. The supply tonnage that was historically unloaded during the previous turn is used as a base. For the four days June 19–22 when historical deliveries were sharply reduced by the storm, the planned figure of 950 tons per turn is used as a base instead of the tonnage actually unloaded.

2. Depending on what Air Superiority Option is selected at the beginning of the game, the tonnage may be reduced by German air interdiction (which in turn depends partially upon the weather the previous turn).

3.   The tonnage is reduced by 90 percent if the weather during the previous turn was storm.

4.   The tonnage is randomly increased or reduced by up to 16 percent, to provide for some uncertainty and short–term variability.

5.   The tonnage is decreased by one percent for each modified barrage strength point of German artillery or aircraft that attacked any of the three Invasion Beach hexes during the previous game–turn.

The final number resulting from steps 1–5 above is the total tonnage of American supply received during the previous game–turn.

Supply Allocation

During the 6:00 AM (8:00 AM in Velikiye Luki) Planning Phase of each day, you may allocate supply to your units for the upcoming day (six game–turns). **Players may allocate supply only during the 6:00 AM (8:00 AM in Velikiye Luki) Planning Phases**. Each HQ unit may be assigned a supply level of your choice, subject to the following constraints:

1.   The total supply tonnage allocated to all your HQ's cannot exceed the amount that is currently "on hand" (i.e., what has already been assigned plus what is still in the stockpile).

2.   If an HQ unit is not at full strength because it has suffered losses, it may be restricted to a lower supply level.

3.   You may not voluntarily assign HQ's to a state of no supply.

When the 6:00 AM (8:00 AM in Velikiye Luki) Planning Phase begins, the game automatically:

1.   Calculates how much supply was received during the previous game–turn, and adds it to the stockpile.

2.   Allocates sufficient supply to each of your HQ units for it and all of its attached units to be in the **same supply state that was assigned to it on the previous day** (insofar as possible, consistent with the constraints listed above).

3.   Subtracts that amount of supply from the stockpile.

In general, you may then assign a lower or higher level of supply to one or more of your HQ's if you wish. To do this, select the HQ you want by using the arrows at the top of the HQ Sidebar and/or the expanded HQ display at the bottom of the screen, and then click on the supply level button beneath the HQ until the level you want is showing on the button. The tonnage remaining in the stockpile decreases if you assign a higher level of supply, and increases if you assign a lower level of supply to a particular HQ. If there is insufficient tonnage in the stockpile to assign the level of supply you want, the supply level showing on the button rolls back to "Minimal."

An HQ unit that is below strength because it has suffered losses might not be able to fully supply all the units attached to it. To be more specific, the maximum supply level that can be allocated to a given HQ depends upon the number of units that are attached to it, as well as the ratio of its current unmodified defense strength to its maximum unmodified defense strength.

You may not voluntarily assign HQ's to a state of no supply. If there is insufficient tonnage available to assign minimal supply to each HQ, your staff assistant will place one or more of them in a state of no supply.

In Market-Garden, the units of the British VIII and XII Corps may not be assigned a supply level higher than defensive, unless the "No VIII and XII Corps Restrictions" Variant is in effect.

In Velikiye Luki, the German Velikiye Luki and 6th Luftwaffe Field Division HQ's may not be assigned a supply level higher than defensive unless the Air Superiority Variants "Air Parity" or "Limited German Air Superiority" are in effect, or (for the Velikiye Luki HQ only). the "No Velikiye Luki Restrictions" Variant is in effect.

The German Cherbourg HQ, in Utah Beach, may not be assigned a supply level higher than defensive, unless the "No Cherbourg Restrictions" Variant is in effect.

Supply Lines

Supply lines are important in the game because, in real life, most of the units on both sides were unable to carry sufficient quantities of supply (especially ammunition) with them all the

time as they moved and fought. This made them very dependent on frequent resupply.

Each unit must have a supply line at the beginning of each game–turn in order to receive the supply that has been allocated to it. (Exception: In Velikiye Luki the German Brandenburg commando units normally do *not* need a supply line. See "Limited Intelligence.") In general, a supply line consists of a continuous path of friendly–owned hexes, free of enemy units and enemy–owned hexes, which begins at the unit in question, extends to the HQ to which the unit is attached, then from the HQ to a road or railroad hex, and finally from the road or railroad hex to a friendly supply source. For Russian units, the supply line must also include the unit's corps– and army–level HQ's. A supply line may always be traced through a friendly–owned hex, even if that hex is also in an enemy zone of control. Most units that cannot trace a supply line immediately go to the next lower supply state. As long as they remain unable to trace a supply line, their supply state continues to decrease by one each turn, until they are in a state of no supply.

A unit's supply line has no set maximum length; however, if the length of any of the segments of the line exceeds a certain value, the unit has a lower supply state than it should, based on the tonnage it was allocated and is consuming. The length of each segment of the supply line is calculated in hexes. The length that each segment may be without a negative effect (for being too long) depends on the current level of enemy air interdiction, which in turn depends upon the Air Superiority Option selected at the beginning of the game, current enemy air allocations, and the current sky conditions. Supply lines may pass through an enemy zone of control **only** if the hex is friendly–owned. Supply lines may not enter or cross any terrain that is prohibited to the unit in question.

If the "Show Supply Lines" Option (under the Options menu) is "on," then each time you click on one of your units, the game briefly draws the unit's supply line back to its current HQ. The color of the supply line indicates whether, and how much, the supply state of the unit is currently being reduced because of the length of its supply line. A green supply line is not too long, and so there is no reduction in the unit's supply state. Other colors indicate that the unit is too far from its HQ, and is therefore in a lower supply state than it should be. In order of increasing length of the supply line (and decreasing supply state for the unit), the colors of supply lines are: green, blue, orange, red.

Supply lines (except for the Russians - see below) consist of three segments. If there is no air interdiction, the first segment of the supply line (from the unit to its HQ) may be up to 12 hexes long without any negative effect. However, that distance can be reduced by air interdiction, and could theoretically be as short as 7 hexes. If the length of the first segment exceeds that base distance (7 – 12 hexes), the unit's supply state is lowered by one level (for example, general supply becomes defensive supply), although the tonnage actually consumed by the unit does **not** decrease. If the length of the first segment exceeds twice the base distance, the unit's supply state is lowered by two levels, and so on. Ultimately, a unit allocated (and consuming) attack supply functions for all purposes as if it were in minimal supply when the length of the first segment of the supply line exceeds three times the base distance (36 hexes if there is no air interdiction). A unit that has a supply line is never reduced all the way to a state of no supply because its supply line is too long.

If there is no air interdiction, the second segment of the supply line (from the HQ to a road hex) may also be up to 12 hexes long without any negative effect. However, like the first segment, that distance can be reduced by air interdiction, and could theoretically be as short as 7 hexes. In the same manner as the first segment, if the length of the second segment exceeds the base distance, the supply state of **all** the units attached to that HQ is lowered by one level, and so on.

The third segment of the supply line (from a road hex to a friendly supply source) may consist of any number of continuous road hexes. However, if this third segment ever has to "move off–road" in order to reach a supply source (either because of enemy–owned hexes, or because the road net "doesn't go there from here"), the supply state of **all** the units attached to that HQ is lowered by one level for each multiple (or fraction thereof) of the base distance that must be spent to go around the obstacle or get to another road.

Every supply line **must** include the HQ to which the unit is currently attached. HQ's themselves automatically meet this requirement. Any unit that cannot trace a supply line to its HQ immediately goes to the next lower supply state. As long as a unit remains unable to trace a supply line, its supply state continues to decrease by one each turn, until it is in a state of no supply.

German Supply Sources and Stockpiles - Gold • Juno • Sword

There are nine possible sources of supply for German supply lines: the primary road hexes on the south and east edges of the Campaign Game map, and the German HQ units themselves. There is only one stockpile that German units actually draw their supply from; the primary stockpile.

The specific sources of supply for German units are:

1. Any of the eight primary road hexes on the south edge of the Campaign Game map. These hexes constitute the normal source of supply for all the German units in the game.

2. German HQ's may function as a source of supply, exactly as described above for Commonwealth HQ's. **If** the current Air Superiority Option is "Air Parity" or "Limited German",

Captured Supply

There are three ways in which supply tonnage may be captured:

1. If an HQ unit is eliminated as a result of combat with adjacent enemy units, a random percentage (0 to 100 percent) of the supply tonnage currently "on hand" with that HQ unit is immediately added to one of the enemy stockpiles as captured supply, and the rest is lost. The enemy stockpile that receives the captured tonnage is the same one that the units that attacked the HQ are currently drawing supply from; if they are drawing supply from more than one stockpile, the larger one receives the captured tonnage. (The supply currently "on hand" with an HQ is the amount that it was allocated on the last 6:00 A M Planning Phase minus what it and the units attached to it have used since then.)

2. If a German unit ever occupies the easternmost invasion beach hex at Gold, Juno, or Sword Beach, a random percentage of the primary Commonwealth stockpile (0 to 50 percent) is immediately added to the primary German stockpile as captured supply, and the primary

Commonwealth stockpile is reduced to by that amount. Both of these are special one–time adjustments; Commonwealth supply deliveries to their primary stockpile continue normally, and tonnage is again added to the primary Commonwealth stockpile on the next game–turn, regardless of whether or not the southernmost invasion beach hex remains under German ownership. The continued arrival of Commonwealth supply tonnage after the loss of Gold beach represents the re–routing of Commonwealth supply deliveries to Juno or sword Beaches and/or air supply.

German Supply Sources and Stockpiles - Market Garden

There are a number of possible sources of supply for German supply lines. German supply sources include **all** the primary road hexes on the edge of the Campaign Game map which begin the game under German control, as well as a limited capability for resupply by air. Regardless of the particular supply source, all German supply tonnage is ultimately drawn from the same stockpile.

Resupply by air works as follows. Depending on the current Air Superiority Option, German HQ's may become a source of either **minimal** or **defensive** supply for the units attached to them. If the current Air Superiority option is "Limited Allied" (the historical situation), any German HQ that cannot trace a supply line to any of the map–edge supply sources **may** become a source of **minimal** supply for itself and all the units attached to it. If the current Air Superiority option is either "Air Parity" or "Limited Axis," any German HQ that cannot trace a supply line to any of the map–edge supply sources **may** become a source of **defensive** supply for itself and all the units attached to it.

In either case, this happens automatically **if**:

a) The HQ in question was allocated either attack, general, or defensive supply on the last 6:00 AM Planning Phase (which represents stretching out a normal allocation); or if

b)   The HQ in question was allocated either minimal or no supply on the last 6:00 AM Planning Phase, **and** the sky conditions since then (including the current sky conditions) have included at least one **daylight** turn of clear, light, or moderate overcast. This represents air supply.

Supply tonnage for German units that use HQ's as their source of supply is **still** subtracted from the German stockpile. Other units besides HQ's **never** function as supply sources, and **never** receive air supply on their own.

German Supply Lines, Sources and Stockpiles - Velikiye Luki

There are seven possible sources of supply for German supply lines; each is listed below. The first four of the seven are road or railroad hexes on the edge of the Campaign Game map; the fifth and sixth are the special Velikiye Luki stockpile, and the seventh represents resupply by air. There are a total of three different stockpiles at these locations that German units actually draw their supply from. The primary stockpile is normally used by all German units except the Velikiye Luki Garrison and the 6th Luftwaffe Field Division. A secondary stockpile is reserved for the 6th, and the Velikiye Luki stockpile is normally reserved for the Velikiye Luki Garrison.

The following four map edge hexes constitute the normal source of supply for all German units in the game except the Velikiye Luki Garrison. They also represent alternate sources of supply for the Velikiye Luki Garrison and the 6th Luftwaffe Field Division.

1.   The railroad hex at the very southwest corner of the Campaign Game map.

2.   The road hex in the center of the western edge of the Campaign Game map.

3.   The railroad hex on the north edge of the Campaign Game map, near the northwest corner.

4.   The western–most of the two road hexes near the center of the southern edge of the Campaign Game map. This hex also constitutes the primary source of supply for the 6th Luftwaffe Field Division.

There are two hexes in Velikiye Luki which constitute the primary source of supply for the units that comprise the Velikiye Luki Garrison, and represent alternate sources of supply for all other German units. These hexes are the Old Town Citadel (the fortress on the west side of the river, adjacent to the river on four hexsides), and the West Railroad Station (the westernmost of two adjacent fortress hexes, both on the railroad, near the eastern edge of the city).

Finally, **if** the current Air Superiority Option is "Air Parity" or "Limited German," German HQ's may become a source of **minimal** supply. Any German HQ that cannot trace a supply line to any of the four map edge supply sources or Velikiye Luki **may** become a source of **minimal** supply for itself and all the units attached to it. This happens automatically **if**:

a) The HQ in question was allocated either attack, general, or defensive supply on the last 8:00 AM Planning Phase (which represents stretching out a normal allocation); or if

b) The HQ in question was allocated either minimal or no supply on the last 8:00 AM Planning Phase, the sky conditions since then (including the current sky conditions) have included at least one **daylight** turn of clear, light, or moderate overcast, **and** the current Air Superiority Option is either "Air Parity" or "Limited German." This represents air supply.

Supply tonnage for German units that use HQ's as their source of supply is **still** subtracted from the appropriate stockpile. Other units besides HQ's **never** function as supply sources, and **never** receive air supply on their own.

Note: regardless of the current tonnages in the three stockpiles, a German HQ (other than the Velikiye Luki HQ) may **not** draw supply from the Velikiye Luki stockpile **unless**:

a) It cannot trace a supply line to any of the map edge hexes listed above, **and**

b) It does not qualify as a source of minimal supply itself.

Except for Brandenburg commando units, any unit that cannot trace a supply line to its HQ immediately goes to the next lower supply state. As long as a non–Brandenburg unit remains unable

to trace a supply line, its supply state continues to decrease by one each turn, until it is in a state of no supply.

Commonwealth Supply Sources and Stockpiles - Gold • Juno • Sword

There are three possible sources of supply for Commonwealth Units: Gold, Juno, and Sword Beaches, and the Commonwealth HQ units themselves. There is only one stockpile that Commonwealth units actually draw their supply from; the primary stockpile.

The specific sources of supply for Commonwealth units are:

1. The easternmost invasion beach hex of Gold, Juno, or Sword Beaches. These beaches constitute the normal source of supply for all the Commonwealth units in the game.

2. Any Commonwealth HQ unit (under certain circumstances). This represents either the short–term stretching out of a normal supply allocation that was already "in the pipeline", or air supply. Any Commonwealth HQ that cannot trace a supply line to either GOLD • JUNO • SWORD Beaches **may** become a source of supply for itself and all the units attached to it. This happens automatically **if**:

   • the HQ in question was allocated either attack, general, or defensive supply on the last 6:00 AM Planning Phase (stretching out a normal allocation); or if

   • the HQ in question was allocated either minimal or no supply on the last 6:00 AM Planning Phase, the weather since then (including the current weather) has included at least one **daylight** turn of clear, light, or moderate overcast, **and** the current Air Superiority Option is not "Limited German" (air supply).

Note: supply tonnage for Commonwealth units that use HQ's as their source of supply is **still** subtracted from the appropriate stockpile. Other units besides HQ's **never** function as supply sources, and **never** receive air supply on their own.

Allied Supply Sources and Stockpiles - Market Garden

There are two possible sources of supply for Allied supply lines. The first is the primary road hex on the southern edge of the Campaign Game map, and the second is resupply by air. There is only one Allied supply stockpile which is used by all Allied units, regardless of which supply source they are using.

Resupply by air works as follows. Depending on the current Air Superiority Option, Allied HQ's may become a source of either **minimal** or **defensive** supply for the units attached to them. If the current Air Superiority option is either "Limited Allied" (the historical situation) or "Air Parity," any Allied HQ that cannot trace a supply line to the primary road hex on the southern edge of the Campaign Game map **may** become a source of **defensive** supply for itself and all the units attached to it. If the current Air Superiority option is "Limited Axis," any Allied HQ that cannot trace a supply line to the primary road hex on the southern edge of the Campaign Game map **may** become a source of **minimal** supply for itself and all the units attached to it.

In either case, this happens automatically **if**:

a) The HQ in question was allocated either attack, general, or defensive supply on the last 6:00 AM Planning Phase (which represents stretching out a normal allocation); or if

b) The HQ in question was allocated either minimal or no supply on the last 6:00 AM Planning Phase, **and** the sky conditions since then (including the current sky conditions) have included at least one **daylight** turn of clear, light, or moderate overcast. This represents air supply.

Supply tonnage for Allied units that use HQ's as their source of supply is **still** subtracted from the Allied stockpile. Other units besides HQ's **never** function as supply sources, and **never** receive air supply on their own.

Russian Supply Lines - Velikiye Luki

Russian supply lines consist of four segments. The first segment begins at the unit in question, and extends to the HQ to which the unit is attached. If there is no German air interdiction and the HQ is a divisional, corps, or army HQ, the first segment of the supply line may be up to 8 hexes long without any negative effect. If the HQ is a brigade HQ, the first segment of the supply line may be up to 5 hexes long without any negative effect. However, these distances can be reduced by German air interdiction, and could theoretically be as short as 5 hexes for divisional and higher–level HQ's, and 3 hexes for brigade HQ's. If the length of the first segment exceeds that base distance (5 – 8 or 3 – 5 hexes, depending on the type of HQ), the unit's supply state is lowered by one level (for example, general supply becomes defensive supply). However, the tonnage actually consumed by the unit does **not** decrease. If the length of the first segment exceeds twice the base distance, the unit's supply state is lowered by two levels, and so on. Ultimately, a unit allocated (and consuming) attack supply functions for all purposes as if it were in minimal supply when the length of the first segment of the supply line exceeds three times the base distance (24 hexes if there is no German air interdiction and the HQ is divisional or higher; 15 hexes if the HQ is a brigade HQ). A unit that has a supply line is never reduced all the way to a state of no supply because its supply line is too long.

The second segment begins at the unit's HQ, and extends to its corps HQ. If there is no German air interdiction and the HQ is not a cavalry or ski HQ, the second segment of the supply line may also be up to 8 hexes long without any negative effect. If the HQ is a cavalry or ski HQ, the second segment of the supply line may be up to 16 hexes long without any negative effect. However, like the first segment, that distance can be reduced by German air interdiction, and could theoretically be as short as 10 hexes for cavalry and ski HQ's, and 5 hexes for all others. In the same manner as the first segment, if the length of the second segment exceeds the base distance, the supply state of **all** the units attached to that HQ is lowered by one level, and so on.

The third segment of the supply line begins at the unit's corps HQ, and extends to its army HQ. If there is no German air interdiction, the third segment of the supply line may also be up to 8 hexes long without any negative effect. However, like the first two segments, that distance can be reduced by German air interdiction, and could theoretically be as short as 5 hexes. In the same manner as the first two segments, if the length of the third

segment exceeds the base distance, the supply state of **all** the units attached to that corps HQ is lowered by one level, and so on.

The fourth and last segment of a Russian supply line begins at the unit's army HQ, extends to a road or railroad hex, and from there to a friendly supply source. This segment may consist of any number of continuous road or railroad hexes, but no more than 8 non–road/non–railroad hexes (assuming there is no German air interdiction). The base value of 8 non–road/non–railroad hexes can be reduced by German air interdiction, and could theoretically be as short as 5 hexes. Also, if this fourth segment includes more than that base value of non–road/non–railroad hexes, the supply state of **all** the units attached to that army HQ is lowered by one level for each multiple (or fraction thereof) of the base value of non–road/non–railroad hexes in the fourth segment of the supply line.

Every Russian supply line **must** include the HQ to which the unit is currently attached, its corps HQ, **and** its army HQ. Army HQ's themselves automatically meet this requirement. A unit that cannot trace one or more of the four segments of its supply line immediately goes to the next lower supply state. As long as it remains unable to trace a supply line, its supply state continues to decrease by one each turn, until it is in a state of no supply.

Russian Supply Sources and Stockpiles - Velikiye Luki

There are four possible sources of supply for Russian supply lines; each is listed below. All are road or railroad hexes on the edge of the Campaign Game map. There is only one Russian stockpile which is used by all Russian units, regardless of which supply source they are tracing their supply line to.

The following four map edge hexes are the sources of supply for all Russian units in the game:

1. The road hex at the very southeast corner of the Campaign Game map.

2. The southernmost of two railroad hexes near the center of the eastern edge of the Campaign Game map.

3. The road hex in the upper middle of the eastern edge of the Campaign Game map.

4. The road hex on the north map edge, near the northeast corner of the Campaign Game map.

Note that, unlike German HQ's, Russian HQ units **never** serve as a supply source. This is because the Red Air Force had no significant air supply capability, and was never able to use its transport aircraft successfully for that purpose.

Supply Lines - Utah Beach

Supply lines are important in the game because, in real life, most of the units on both sides were unable to carry sufficient quantities of supply (especially ammunition) with them all the time as they moved and fought. This made them very dependent on frequent resupply.

Except as noted below, each unit must have a supply line at the beginning of each game–turn in order to receive the supply that has been allocated to it. A supply line consists of a continuous path of friendly–owned hexes, free of enemy units and enemy–owned hexes, which begins at the unit in question, extends to the HQ to which the unit is attached, then from the HQ to a road hex, and finally from the road hex to a friendly supply source. A supply line may always be traced through a friendly–owned hex, even if that hex is also in an enemy zone of control. Most units that cannot trace a supply line immediately enter a state of no supply.

There are two exceptions: German coastal artillery units (at all times), and **all** units on the first day of the Campaign Game (June 7). German coastal artillery units are an exception because they were "static" units, with many of their guns permanently emplaced, and it was possible (and in fact easier) for them to establish and maintain large ammo dumps close to the guns. Since these ammo dumps were already in place when the game begins, German coastal artillery units do not have to trace a supply line in order to be at their allocated supply level.

There are several reasons why the supply line requirement for all other units is not in effect during the first day of the Campaign Game. The American units that landed on D–Day and D+1 were all well–stocked with extra food and ammunition (in some cases literally all that the men could carry). There was relatively little combat in the Utah sector on D–Day (at least from the standpoint of ammunition expenditure by the ground units), and so most American units still had plenty of supply with them when the Campaign Game begins. Also, most of the German units in the

area did not see combat at all on D–Day, and a large number of the German units spent the majority of D+1 still moving to the front line. Therefore, when the Campaign Game begins, it is assumed that all the units on both sides already have with them all the supply they need for the day, and units are not required to trace a supply line on June 7th (only). This allows players the option of concentrating on geographic objectives on June 7th (as their historical counterparts did), rather than having to worry *immediately* about their supply lines.

American Supply Sources and Stockpiles - Utah Beach

There are three possible sources of supply for American supply lines: Utah Beach, the city of Isigny (southeast of Utah Beach), and the American HQ units themselves. There are two different stockpiles at these locations that American units actually draw their supply from; the primary stockpile is used by all the American units except the 120th Infantry Regiment and the 83rd Infantry Division, and the secondary stockpile is reserved for the 120th and 83rd.

The specific sources of supply for American units are:

1. The southernmost invasion beach hex of Utah Beach. This constitutes the normal source of supply for all the American units in the game except the 120th Infantry Regiment and the 83rd Infantry Division. It represents an alternate source of supply for the 120th and 83rd.

2. The easternmost hex of the city of Isigny (southeast of Utah Beach). This constitutes the normal source of supply for the 120th Infantry Regiment and the 83rd Infantry Division, and also represents an alternate source of supply for other American units that cannot trace a supply line to Utah Beach.

3. Any American HQ unit (under certain circumstances). This represents either the short–term stretching out of a normal supply allocation that was already "in the pipeline", or air supply. Any American HQ that cannot trace a supply line to either Utah Beach or Isigny **may** become a source of **minimal** supply for itself and all the units attached to it. This happens automatically **if**:

a) The HQ in question was allocated either attack, general, or defensive supply on the last 6:00 AM Planning Phase (stretching out a normal allocation); or if

b) The HQ in question was allocated either minimal or no supply on the last 6:00 AM Planning Phase, the weather since then (including the current weather) has included at least one **daylight** turn of clear, light, or moderate overcast, **and** the current Air Superiority Option is not "Limited German" (air supply).

Note: supply tonnage for American units that use HQ's as their source of supply is **still** subtracted from the appropriate stockpile. Other units besides HQ's **never** function as supply sources, and **never** receive air supply on their own.

German Supply Sources and Stockpiles - Utah Beach

There are four possible sources of supply for German supply lines: the two primary road hexes on the south edge of the Campaign Game map, the Cherbourg stockpile, and the German HQ units themselves. There are two different stockpiles at these locations that German units actually draw their supply from; the primary stockpile is normally used by all the German units except the Cherbourg Garrison, and the Cherbourg stockpile is normally reserved for the Cherbourg Garrison.

The specific sources of supply for German units are:

1. Either of the two primary road hexes on the south edge of the Campaign Game map. These hexes constitute the normal source of supply for all the German units in the game except the Cherbourg Garrison, and represent an alternate source of supply for the Cherbourg Garrison.

2. The Naval Arsenal in Cherbourg (the 3–hex fortress complex adjacent to the ocean). This constitutes the primary source of supply for the units that comprise the Cherbourg Garrison, and represents an alternate source of supply for all other German units.

3. **If** the current Air Superiority Option is "Air Parity" or "Limited German", German HQ's may function as a source of **minimal** supply, exactly as described above for American HQ's.

Note: regardless of the current tonnages in the two stockpiles, a German HQ (other than the Cherbourg HQ) may **not** draw supply from the Cherbourg stockpile **unless**:

1. It cannot trace a supply line to either of the primary road hexes described above, **and**

2. It does not qualify as a source of minimal supply itself.

Captured Supply

There are four ways in which supply tonnage may be captured, depending upon the game being played only one option may be available:

1. If an HQ unit is eliminated as a result of combat with **adjacent** enemy units, a random percentage (0 to 100 percent) of the supply tonnage currently "on hand" with that HQ unit is immediately added to the primary enemy stockpile as captured supply, and the rest is lost. (The supply currently "on hand" with an HQ is the amount that it was allocated on the last 6:00 AM (8:00 AM in Velikiye Luki) Planning Phase minus what it and the units attached to it have used since then.)

2. In Velikiye Luki, if a Russian unit ever occupies **both** the Old Town Citadel **and** the West Railroad Station in Velikiye Luki, a random percentage of the German Velikiye Luki stockpile (0 to 100 percent) is immediately added to the primary Russian stockpile as captured supply, and the Velikiye Luki stockpile is reduced to 0 tons. Both of these are special one–time adjustments; the Velikiye Luki stockpile never receives any additional supply deliveries. (The Old Town Citadel is the fortress on the west side of the river, adjacent to the river on four hexsides, and the West Railroad Station is the westernmost of two adjacent fortress hexes, both on the railroad, near the eastern edge of the city.)

3. If a German unit ever occupies the southernmost invasion beach hex at Utah Beach, a random percentage of the primary American stockpile (0 to 100 percent) is immediately added to the primary German stockpile as captured supply, and the primary American stockpile is reduced to 0 tons. Both of these are special one–time adjustments; American supply deliveries to their primary

stockpile continue normally, and tonnage is again added to the primary American stockpile on the next game–turn, regardless of whether or not the southernmost invasion beach hex remains under German ownership. The continued arrival of American supply tonnage after the loss of Utah Beach represents the re–routing of American supply deliveries for VII Corps units to Omaha Beach and/or air supply.

4. If an American unit ever occupies the Naval Arsenal in Cherbourg (the 3–hex fortress complex adjacent to the ocean), a random percentage of the German Cherbourg stockpile (0 to 100 percent) is immediately added to the primary American stockpile as captured supply, and the Cherbourg stockpile is reduced to 0 tons. Both of these are special one–time adjustments; the Cherbourg stockpile never receives any additional supply deliveries.

Surrender

"You and your troops have resisted stubbornly and gallantly, but you are in a hopeless situation. The moment has come for you to capitulate." – Major General J. Lawton Collins, American VII Corps Commander, to the Commander of the German Cherbourg Garrison, June 21, 1944

If things get bad enough in their immediate vicinity and stay that way, sooner or later most men surrender rather than continue to fight. Like the individuals it contains, most units also have a "breaking point." When one or more units are surrounded, out of supply, and under attack, they gradually lose their ability, and ultimately their will, to continue to resist. The larger and better–prepared the "pocket," the longer it generally holds out, but eventually, when all hope of victory or rescue is gone, the officers and men in most units begin to wonder whether one more day of resistance is worth their lives. Only rarely, and under special circumstances, do surrounded units fight until the death of the last man.

At the end of every game–turn, the game determines whether any units have surrendered. The following units are **susceptible** to surrender:

1. HQ units that are in a state of no supply **and** cannot trace a supply line to **any** friendly supply source.

2. Non–HQ units that are in a state of no supply, **are adjacent to an enemy unit**, **and** cannot trace a supply line to **any** friendly HQ that is within 10 hexes.

For each unit that is **susceptible** to surrender, the game generates a random number between 0 and 10 and compares it to the unit's current morale. If the random number is greater than the unit's current morale, there is a **one in six chance** that the unit surrenders. Units that surrender are immediately removed from the map, and are considered to be completely eliminated for victory point and replacement purposes. The game checks surrender for HQ units first, followed by non–HQ units.

The following morale modifiers apply to surrender determination **only**:

  HQ units:

1. Current morale is increased by one if the HQ is **not** adjacent to an enemy unit.

2. Current morale is decreased by one if the HQ **is** adjacent to an enemy unit.

3. In Velikiye Luki, current morale is increased by two if the HQ is German (see following section).

4. In Velikiye Luki, current morale is increased by one if the HQ is Russian Guards.

Non–HQ units:

1. Current morale is increased by one if the unit (or the stack containing the unit, if it is not alone in the hex) has a current (modified) defense strength of 4 or more.

2. Current morale is decreased by one if the unit (or the stack containing the unit, if it is not alone in the hex) has a current (modified) defense strength of 2 or less.

3. In Velikiye Luki, current morale is increased by two if the unit is German (see following section).

4. In Velikiye Luki, current morale is increased by one if the unit is Russian Guards.

Modifications to German Surrender - Velikiye Luki

The Russian front of WWII was notorious for its brutality, its lack of quarter, and the ferocity and depth of hatred on both sides which characterized much of the fighting. There were several reasons for this phenomenon, which set the Russian front apart from the conduct of WWII throughout most of the rest of Europe and North Africa. First, both Nazi Germany and the Soviet Union were thoroughly totalitarian states, two of the most anti–humanitarian regimes of modern times. Neither felt any remorse over torturing and killing their *own* people by the millions, much less those of their sworn enemy. On the German side, this unfortunate situation was abetted by rabid anti–communism, and an element of ethnic disdain and even racial hatred of all Slavic and Asiatic people, which was encouraged by official Nazi propaganda at every opportunity. On the Russian side, there was first and foremost a traditional lack of concern for the lives and rights of individuals, which had always been a significant element of Russian and central Asian culture, and which greatly

pre–dated the Bolshevik Revolution. Finally, it was also relevant that the Soviet Union was *not* a signatory to the Geneva Convention regarding the "rules of war," and there was *n o* Russian "Red Cross" or its equivalent. Therefore, neither side on the Russian front considered itself bound by the legal formalities of war that applied elsewhere, and there was no outside influence to deter war crimes. Unlike the "civilized" western front, where one of the main reasons the Allies were at war in the first place was to prevent and punish such crimes, on the Russian front there was nothing to hold either side back from the most barbaric behavior and savage reprisals.

To help reflect the brutal and desperate nature of the Russian front, many units in this game are less likely to surrender than they would be on other fronts. This is especially true for German SS units, which were routinely executed *en masse* soon after capture by the Russians, and which (as a result) contained many men who preferred death in battle over surrender to the Russians. Therefore, in this game, German SS units **never** surrender, and the following procedure never applies to them.

Artillery

"Artillery is the God of war." – Joseph Stalin

In addition to the attack, defense, armor, and antitank strengths that are possessed by all units, each artillery unit also has a barrage strength, a support strength, and a maximum range. **Barrage strength** is used to attack enemy–occupied hexes, **support strength** is used to increase the defense strength of hexes occupied by friendly units, and the **range** is the maximum distance in hexes from the artillery unit that either of these two strengths may be used.

"Artillery" in the context of the game is defined as those weapons designed primarily for indirect fire, such as mortars, howitzers, and rocket launchers. Although in theory most anti–aircraft and antitank guns also had a range of several hexes, these were direct fire weapons that depended upon the gunners being able to see their own targets. When firing at ground targets, that direct sighting distance rarely exceeded one Market–Garden hex due to terrain and atmospheric conditions. Furthermore, most anti–aircraft and antitank units were not organized, trained, or equipped to conduct indirect fire missions, which required forward observers and very different (and more complex) fire control techniques. Therefore, anti–aircraft and antitank units are not considered artillery for game purposes, and do not have barrage or support strengths or ranges against ground targets (anti–aircraft units do have ranges against aircraft; see "Anti–Aircraft Fire").

Artillery Movement and "Ready" Status

Artillery units may conduct tactical, strategic, automatic, stack, and divisional movement like other units. However, in order to conduct a fire mission, an artillery unit must be "ready." In real life, this means that the guns are set up and sufficient ammo is un-crated and ready to fire, and (more importantly) that a fire control network is in place, which consists of verified map locations, radio or field telephone contact with authorized and properly located forward observers, an approved fire plan, etc. Setting up the fire control network following a move actually accounts for most of the time required to get "ready," more so than setting up the guns themselves.

An artillery unit cannot be ready while it is moving, and thus cannot conduct a fire mission on the same turn in which it moves. After it stops moving, one or more additional turns are always required in order to prepare, after which it may fire.

All rocket and self–propelled artillery units only require one turn to prepare, as do German light artillery units (defined as 75–76 mm guns). British, Polish, and American airborne artillery units (equipped with portable 75mm guns) likewise require only one turn. British field artillery units (equipped with 25–pounders) and German non–self–propelled medium artillery units (100–150 mm guns) require two turns to prepare. German heavy artillery units (170 mm and larger guns) require three turns, and British medium artillery units (155mm guns and howitzers) require four turns. Due to a nearly total lack of radios, surveying equipment, and accurate maps, as well as a general shortage of transport for ammunition, Russian artillery units require much longer to prepare to fire. Russian mortar and rocket artillery units require three turns to prepare; Russian light artillery units (defined as 76mm guns) require six turns; Russian medium artillery units (122mm guns) require 12 turns; and Russian heavy artillery units (152mm guns) require 18 turns.

There are several events that can further delay an artillery unit's readiness to fire. For both sides, moving to another hex or becoming adjacent to an enemy unit cancels all time previously spent preparing to fire. Digging in merely causes the unit to make no progress that turn in preparing to fire.

Artillery units which are not ready, are not assigned movement or dig in orders for that turn, and are not adjacent to an enemy unit, automatically spend the turn preparing to fire, and continue to prepare on subsequent turns until they are ready to fire. The unit's ready status is indicated following the word "ready" on the right side of the Unit Window: " " indicates that the unit is ready and is presently capable of conducting a fire mission. A number following the word "ready" indicates the number of turns remaining, barring other orders or attacks against it, until the unit will be ready to fire.

No extra time is required to go the other way, from ready to not prepared; an artillery unit that is ready to fire may be assigned movement orders at any time, and automatically loses its ready status just before moving.

Artillery units may dig in like all other units. Ready status has no effect on this, except that an artillery unit cannot dig in on the

same turn that it conducts a fire mission or is preparing to fire. Artillery units may benefit from both types of field fortifications like all other units.

Artillery Fire Missions

Artillery units that are ready, and whose current barrage and/or support strengths are greater than zero, may conduct fire missions. There are two general types of fire missions: offensive and defensive. Offensive fire missions can be further subdivided into barrage, interdiction, "shoot and scoot," and on–call counterbattery. Defensive fire missions can be subdivided into dedicated support and on–call support.

To assign a barrage, interdiction, or dedicated support mission, click on the artillery unit, select it within the Unit Window (if it is not the top unit in the stack), and then "alternate–click" ("command-click" on Macintosh computers) on the intended target hex on the map. An alternate method is to select the artillery unit within the Unit Window, click on it again within the Unit Window to open the Command Box, and then (if the "target" symbol is showing on the artillery button) click on the intended target hex on the map.

To assign a "shoot and scoot" fire mission, click repeatedly on the artillery button within the Command Box until the "target plus tactical movement" symbol is showing on the artillery button. Then, click on the intended target hex on the map. Note that "shoot and scoot" fire missions are limited to certain types of artillery units; see "Offensive Fire Missions" below.

To assign on–call counterbattery or on–call support missions, click repeatedly on the artillery button within the Command Box until the option you want is shown. For these two types of fire missions, it is **not** necessary to assign a specific target hex (in fact, you can't); your staff assistant will pick the target hex for you during the Execution Phase, based on events as they happen.

Whenever the Command Box is open for a selected artillery unit that is ready, the cursor becomes a red bulls–eye, and remains so while it is located over any hex that is within range of that artillery unit. The cursor changes to an "X" when it is located over a hex that is out of range for that artillery unit. For selected and ready artillery units whose Command Box is not open, pressing the "alternate" key ("command" key on Macintosh computers) and holding it down shows the bulls–eye and "X" range indicators.

When a specific, permissible target hex is assigned by clicking or alternate–clicking on it (command-clicking on Macintosh computers), it is marked with two target indicators of different colors. The blue target indicator is temporary, and always corresponds to the green border around the selected artillery unit's hex, so that when you are reviewing your orders later, you can easily see which target hex was assigned to that artillery unit. The other target indicator is either a red bulls–eye or a green shield, and remains after you de–select the artillery unit. The red bulls–eye signifies a barrage, interdiction, or shoot–and–scoot (offensive) fire mission, and the green shield signifies a dedicated support (defensive) fire mission.

If you selected the "One Division per Attack" Realism Option at the beginning of the game, whenever you click on a target hex that is within range, the game performs an attachment test to verify that the target is a valid one for that artillery unit, based on which HQ it is currently attached to.

One of the primary purposes of attachment (in combination with the "One Division per Attack" Realism Option) is to limit artillery fire to the support of units that are attached to the same HQ as the artillery unit. The purpose of this restriction is to reward players for following the standard and sound military practice of making each HQ unit exclusively responsible for a well–defined sector of the front line.

A potential target hex automatically passes the attachment test if it is **not** adjacent to **any** friendly units. If a potential target hex **is** adjacent to one or more friendly units, it passes the attachment test if at least **one** of those adjacent friendly units is attached to the **same** HQ as the artillery unit. However, to prevent an unrealistic degree of flexibility from the mixing of units of different HQ's all along the front line, the "One Division per Attack" restriction applies to **all** attacks, both artillery **and** non–artillery. When this Realism Option is in effect, **no** attack may include units that are attached to more than one HQ.

If the units of a particular HQ need more artillery support than can be provided by aircraft (which are not subject to the attachment restrictions), the only solution is to attach more artillery to that HQ. However, that cannot be done until the next 6:00 AM (8:00 AM in Velikiye Luki) Planning Phase, unless the additional artillery is attached to the unit's Corps HQ. This is not an arbitrary or artificial restriction; it is an intentional model of how military command structures in WWII really worked. In real

life, artillery from one division could not start firing in direct support of another division without prior authorization, communication, and planning (i.e., reattachment). Calling someone on the radio or field telephone just wasn't sufficient.

In addition to the range and attachment tests, both British and German artillery units must **also** pass a "battery access" test whenever the "One Division per Attack" Realism Option is selected. In this case, only **one** British or German artillery unit may be assigned per target hex for **each** battalion–equivalent of friendly units currently adjacent to that target hex. For the purposes of this restriction, all companies adjacent to the target hex count as one–third of a battalion, all remaining fractions are rounded off to the nearest integer, and all artillery units are considered to be equal in size. If there are no units adjacent to the target hex, the player may assign a maximum of one artillery unit to that target hex. The American airborne divisions are **not** under this restriction.

The above provision accurately reflects the limited flexibility of both British and German artillery tactics, doctrines and procedures. Although *in theory* British artillery techniques were very similar to the superior American system, in which any one of several forward observers could quickly request and correct fire from numerous artillery battalions, as a practical matter there were still important differences. By 1944, it had become standard procedure for the commanders of British artillery units to *personally* serve as one of the forward observers for their units. The idea behind this was that the commanders would be in a position to give immediate *orders* for fire missions, rather than simply make requests, thereby simplifying and speeding up the whole process. While this worked very well in those particular sectors where the commanders were located, lower–ranking forward observers in other sectors frequently found it difficult to get timely responses to their fire support requests. In practice, the forward–located British artillery commanders frequently became too involved in the battles closest to their own positions, and lost track of how events elsewhere fitted into the "big picture".

The Germans had a slightly different set of problems with their artillery, although the net result was similar. They normally could not mass the fire of numerous artillery units in a short period of time. This was because each German artillery observer usually requested and controlled the fire from only one artillery battalion, and so coordinating the fire from several artillery units onto the same target was a more difficult and time consuming proposition.

American and German artillery doctrines, tactics and procedures were different from each other in significant ways. The greatest difference was in the area of the artillery fire control systems employed by the two armies. Under the American system, it was possible for a *single* forward observer to request and control the fire from *all* the artillery units in his division. This made American artillery very flexible and responsive, and capable of rapid, heavy concentrations of fire. In some recorded cases, only a few minutes elapsed between a verbal artillery request from an authorized forward observer and the arrival of a devastating barrage from numerous artillery battalions, all firing on the same target.

There were also many differences between Russian and German artillery doctrines, tactics and procedures. In general, Russian artillery had tremendous firepower due to its many units and guns, but it was also slow to react, ponderous and clumsy, and relied on WWI–era techniques characterized by heavy, pre–planned, and inflexible concentrations of fire. Due primarily to the lack of communications equipment, but also to a shortage of technically trained personnel, Russian artillery required much more time to coordinate and plan its fire missions than was the case in the German Wehrmacht or other western armies. One historical source states that "effective Soviet artillery fire required hours, or days, of advance planning." Furthermore, once Russian artillery fire plans were in place, they were difficult or impossible to change. These factors made Russian artillery of limited use in mobile or defensive situations.

The **minimum** range for **all** artillery fire missions is one hex (i.e., an artillery unit may not fire any type of mission into its own hex).

Whenever an artillery unit itself comes under attack and uses its own defense strength, any fire missions that were assigned to it for that game–turn (and have not yet been resolved) are delayed by an amount of time proportional to the strength of the attack.

Offensive Fire Missions

There are four types of offensive fire missions: barrage, interdiction, "shoot and scoot," and on–call counterbattery. A **barrage mission** is a concentrated artillery attack in which the barrage strength of an artillery unit is applied all–at–once against the defense strength of an enemy unit in the target hex, with the intention of inflicting damage on the enemy unit and/or

forcing it to retreat. An **interdiction mission** applies the barrage strength of the artillery unit gradually, throughout the Execution Phase, with the intention of interfering with enemy activities in the target hex, especially enemy movement and artillery fire out of the target hex. A **"shoot and scoot" mission** combines a barrage mission with tactical movement, and can only be conducted by certain types of artillery units. An **on–call counterbattery mission** automatically applies the barrage strength of the artillery unit all–at–once against a particular enemy artillery unit which fires during the Execution Phase. *Which* enemy artillery unit is determined by your Staff Assistant during the Execution Phase.

Specific target hexes for barrage, interdiction, and "shoot and scoot" missions are assigned during the Planning Phase, and after assignment are indicated by a red bulls–eye with the letter "A" on it. "Shoot and scoot" fire missions are always resolved as barrage attacks. Otherwise, whether an offensive fire mission with a pre–designated target hex is resolved as barrage or interdiction during the Execution Phase depends on whether or not the target hex is currently occupied and how far away it is from friendly units; see below for more detail. The specific target hex for an on–call counterbattery mission is not determined until the Execution Phase.

Note that the target hex for a barrage or interdiction mission does not have to contain known enemy units; unoccupied hexes or suspected positions *may* be designated for attack. If an enemy unit is there or enters the hex during the Execution Phase, it will be attacked. Attacks made against hexes that remain unoccupied throughout the Execution Phase have no effect except to consume supply and add to the fatigue of the artillery unit.

If more than one artillery unit is firing on the same target hex, all of their barrage strengths are added together and combined into one attack.

Barrage

If the target hex for an artillery fire mission is **also** being probed or assaulted by friendly non–artillery units, the modified barrage strength of the artillery unit is **added** to the attack strength of the unit(s) conducting the probe or assault, and no separate artillery attack is resolved.

If the target hex for an artillery fire mission is **not** being probed or assaulted by friendly units, but **is** currently occupied by one or

more enemy units **and** is within three hexes of a friendly unit, the modified barrage strength of the artillery unit is applied as a **separate attack** against **each** unit in the target hex **if** the final combat odds of that separate barrage attack are at least 1:1.

In addition to the attack(s) described above, barrage missions which achieve a favorable combat result **also** cancel any movement, attacks, or other actions about to be conducted by the units in the target hex. If the combat result is unfavorable (from the standpoint of the attacking artillery), then movement, attacks, or other actions by the units in the target hex are merely delayed.

Interdiction

A barrage attack is automatically resolved as interdiction instead if any of the following conditions are true:

1. If the target hex is more than **three** hexes away from the nearest friendly unit.

2. If the target hex is currently unoccupied.

3. If the target hex is **not** being attacked by friendly non–artillery units, **and** if the final combat odds of that separate barrage attack are less than 1:1.

4. If attacking an HQ which is alone in a hex, the attack is resolved as an interdiction regardless of the odds or proximity of other friendly units.

Artillery attacks will be resolved as barrage attacks if the following conditions are met:

1. If the target hex is more than 2 hexes from a friendly unit and the odds are greater than 1.0, the attack will resolve as a barrage, otherwise it is an interdiction.

2. If the target hex is within **two** hexes of a friendly unit, the attack is resolved as a barrage if there is an enemy unit in the hex.

The greater the barrage strength that is applied against a target hex in an interdiction attack, the greater is the probability that enemy movement or artillery fire out of that hex (and/or other activities there) will be delayed or prevented.

Shoot and Scoot

"Shoot and scoot" fire missions may be performed by self–propelled, airborne, and rocket artillery units **only**; other types of artillery units do not have enough mobility. To assign a shoot and scoot fire mission, click repeatedly on the artillery button within the Command Box until the "target plus tactical movement" symbol is showing on the artillery button. Then, click on the intended target hex on the map. Shoot and scoot fire missions are resolved just like normal barrage missions, except that the artillery unit automatically moves to an adjacent hex immediately after the fire mission is conducted. The purpose of this one–hex tactical move is to avoid enemy counterbattery fire, which might otherwise damage or destroy the artillery unit. Exactly which adjacent hex the artillery unit moves to is determined during the Execution Phase by your staff assistant. After the move, the artillery unit must set up normally before it can fire again.

On–Call Counterbattery

On–call counterbattery fire missions represent "opportunity" or short–notice barrage attacks against enemy artillery units which fire during the Execution Phase. To assign an on–call counterbattery mission, click repeatedly on the artillery button within the Command Box until the "cannon plus target" symbol is shown. The specific target hex for this type of fire mission is *not* assigned during the Planning Phase, but is determined by the staff assistant immediately before the attack is made.

Note: In Velikiye Luki, due to a variety of historical factors, including a lack of spotting, range finding, and communications equipment, Russian artillery units may **not** conduct on–call counterbattery missions.

Defensive Fire Missions

There are two types of defensive fire missions: dedicated support and on–call support. A **dedicated support** fire mission assigns a specific hex or group of adjacent hexes to a particular artillery unit during the Planning Phase, and then adds the **support strength** of that artillery unit to the defense strength of any friendly units in that hex or hexes **if** they are attacked by adjacent enemy units during the following Execution Phase. An **on–call support** fire mission does not assign an artillery unit a specific hex or hexes to support, but instead places

it into a "pool" of artillery units, which are available to support any qualified friendly unit which is attacked by adjacent enemy units during the following Execution Phase.

Unlike offensive fire missions, an artillery unit may conduct several defensive fire missions in one turn, using its support strength several times to add to the defense strength of several friendly–occupied hexes.

Note: Rocket artillery may **not** be utilized for defensive fire missions.

Dedicated Support

When the target hex for a barrage, interdiction, or dedicated support fire mission is assigned, a green shield appears on the target hex and **each hex adjacent to it** that contains a friendly unit that is attached to the **same** HQ as the artillery unit. The shield indicates that the support strength of the artillery unit is automatically added to the total defense strength of that friendly–occupied hex **if** the hex is probed or assaulted by **adjacent** enemy units during the next Execution Phase.

All dedicated support fire missions are **in addition to** the offensive fire mission that **also** takes place against the original target hex if it is **not** occupied by friendly units when the attack is assigned.

Note: if the "One Division per Attack" Realism Option is in effect, a defending unit or stack may **not** utilize the support strengths of artillery units from more than one HQ, regardless of how many units attached to different HQ's are present in the target hex.

On–Call Support

To assign an on-call support mission, click repeatedly on the artillery button within the Command Box until the "shield plus target " symbol is shown; then close the Command Box. The specific hexes which the artillery unit will support are *not* assigned during the Planning Phase, but are determined during the Execution Phase by the staff assistant. The staff assistant allocates the artillery units assigned to on-call support among those hexes which are actually attacked by adjacent enemy units, as the attacks occur during the Execution Phase. A given artillery unit assigned to on-call support may use its support strength to oppose more than one enemy attack,

depending on when the enemy attacks occur during the Execution Phase, and the staff assistant's assessment of the situation.

Automatic Artillery Allocation

```
Staff Duties
◇ Handle All Operations

◇ Allocate Supply (Each Day)
◇ Plan Fire Support (Each Turn)
◇    Ok To Use Air Force
◇    Ok To Use Navy
◇ Plot Ground Units (Each Turn)
◇ Handle Night Moves

   Plan Fire Support Now
   Plot Ground Units Now
```

If you wish, you can delegate some or all of the task of assigning artillery fire missions to your staff assistant. To do this, select either "Plan Fire Support (Each Turn)" or "Plan Fire Support Now" from the **Staff Duties** pull–down Menu on the Menu Bar.

If "Plan Fire Support (Each Turn)" is "on" (i.e., if the small diamond to the left of it is filled in), **each turn** your staff assistant automatically assigns a fire mission to each of your artillery units that is ready to fire and that you did not assign orders for. If your staff assistant determines that your front–line units need artillery support, he assigns it for you; otherwise, he picks suitable targets. The option "Ok to Use Air Force" allows you to delegate requests for air support to your staff assistant as well. The option "Ok to Use Navy" is selectable only in Utah, because there is no naval support in the other two games. Note that with "Plan Fire Support (Each Turn)," staff–assigned fire missions and air support requests are not made until immediately **after** you go to the Execution Phase (i.e., you do **not** have an opportunity to review them prior to Execution).

If you want to review and/or edit the fire missions and support requests assigned by your staff assistant, make sure "Plan Fire

Support (Each Turn)" is "off," and select "Plan Fire Support Now" instead. This causes your staff assistant to make all his target assignments and support requests immediately, so that you can review and revise them if you wish. Your staff assistant makes requests for air support also, if that option (beneath "Plan Fire Support (Each Turn)" higher up on the menu) is "on."

There are two ways to review your fire support plan before Execution. If you want to see the assignments made by your staff assistant, be sure that you have already selected "Plan Fire Support Now." To see lines connecting all your artillery units with their targets, select "Show Fire Support Plan" from the "Planning" Menu. Or, you can click on an individual artillery unit to see a blue target indicator on its assigned target hex.

Regardless of which of these options is selected, your staff assistant only assigns fire missions to artillery units that have **not** received other orders or fire missions from you. If you have selected "Plan Fire Support Now" and want to change something the staff assistant has done, you can revise his orders freely, just as you would your own.

Modifications to Artillery Fire Strengths

The barrage and support strengths of artillery units may be modified (usually reduced) by several factors. Ranges are never modified. The effects of all the modifiers given below are cumulative. Except for supply, these modifiers also apply to air attacks.

Terrain

Barrage strengths are **halved** when the target hex is beach, invasion beach, swamp, bocage, forest, village, or city, and **quartered** when the target hex is a bunker, beach bunker, or fortress. Support strengths are not affected by terrain.

Night

Barrage and support strengths are **halved** on night turns.

Supply

The following table shows the effect that different supply states have on the barrage and support strengths of artillery units.

Supply State	Barrage Strength	Support Strength
Attack	increased by 50 %	increased by 50 %
General	normal	normal
Defensive	halved	normal
Minimal	quartered	halved
None	zero	quartered

Field Fortifications

Barrage strengths are reduced if the target hex contains a completed field fortification (of either type). The amount of the reduction depends on the size of the field fortification and the number of units in the hex; if the field fortification is large enough to "contain" all the units in the hex, barrage strengths against the hex are **halved**. Exception: units conducting probes, assaults, or any type of movement do not benefit from field fortifications in their hex.

Disruption

Each point of disruption reduces an artillery unit's barrage and support strengths by 3.3 percent.

Fatigue

Each point of fatigue reduces an artillery unit's barrage and support strengths by 3.3 percent.

Naval Support - Gold • Juno • Sword

The Commonwealth units that landed in Normandy were conveyed and supported by a vast armada; German naval forces stationed in France were tiny by comparison. Against a total Allied force of 7 battleships, 3 escort carriers, 25 cruisers and monitors, 121 destroyers, 1,055 smaller surface warships, and 5,816 transports, landing craft, and support ships, the German Naval Group West could muster only 5 destroyers, 40 torpedo boats, and 49 coastal submarines. The overwhelming Allied air superiority made matters even worse for the Germans. As a result, German naval operations during daylight hours were completely out of the question; the life expectancy of any German warship that ventured outside its heavily–protected port in daylight would have been measured in minutes, and the German captains and admirals knew it. German torpedo boats did have limited success with hit–and–run raids at night: during June and July they sank or severely damaged a light cruiser, 3 destroyers, 5 smaller warships and 11 transports. The U–boats only managed to sink two small warships and one large transport. Mines caused more damage, sinking a British destroyer, 10–12 smaller warships, and about 90 transports and landing craft. A few small warships and landing craft were sunk by German coastal artillery. However, these losses were nothing more than pinpricks to the huge Allied force, and the Germans paid dearly for their efforts, as almost all of their ships were lost in the process.

In the final analysis, German naval operations had no significant effect on the overall course of the invasion. The Allies actually lost more ships to the great storm in mid–June than they did to combat – a total of 153 smaller warships, transports, and landing craft were wrecked in the gale. Total Allied naval losses in Normandy (from all causes) amounted to just 4 percent of their initial force.

During their pre–invasion planning, the Allied commanders knew that gunfire support from the larger warships would be crucial to the success of the invasion. A great deal of effort was therefore devoted to planning the initial naval bombardment, and in providing flexible fire support for the troops after they were off the beach. Most of the battalions of the initial assault force were assigned a Shore Fire Control Party consisting of naval personnel. Their job was to accompany the front–line troops and to maintain radio contact with the gunnery officers

aboard one or more of the large warships. This allowed fire requests and accurate target information to be quickly passed from the troops who needed help to the big guns at sea. Later–arriving reinforcements also had Shore Fire Control Parties attached at the divisional level.

These provisions for naval gunfire support worked well and paid off handsomely. The large warships had tremendous firepower compared to conventional artillery, and the Shore Fire Control Parties quickly became adept at calling down heavy, accurate barrages anywhere, anytime. In their reports, the German commanders all stressed how effective this naval gunfire was; most of them thought that it inflicted more damage on their front–line units than Allied aircraft. Field Marshal Rommel, who was perhaps overstating his case, said in a report dated June 10: "The effect of the heavy naval guns is so immense that no operation of any kind is possible in the area commanded by this rapid–fire artillery, either by infantry or tanks."

Naval Support - Utah Beach

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warships and one large transport. Mines caused more damage, especially off Utah Beach, where they sank the American destroyer Corry on D–Day and the American destroyer Glennon on June 8. Also lost to mines were a British destroyer, 10–12 smaller warships, and about 90 transports and landing craft. A few small warships and landing craft were sunk by German coastal artillery. However, these losses were nothing more than pinpricks to the huge Allied force, and the Germans paid dearly for their efforts, as almost all of their ships were lost in the process.

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These provisions for naval gunfire support worked well and paid off handsomely, especially at Utah Beach. The large warships had tremendous firepower compared to conventional artillery, and the Shore Fire Control Parties quickly became adept at calling down heavy, accurate barrages anywhere, anytime. In their reports, the German commanders all stressed how effective this naval gunfire was; most of them thought that it inflicted more damage on their front–line units than Allied aircraft. Field Marshal Rommel, who was perhaps overstating his case, said in a report dated June 10: "The effect of the heavy naval guns is so immense that no operation of any kind is possible in the area commanded by this rapid–fire artillery, either by infantry or tanks."

Requesting Naval Support

In the game, naval support works very much like normal artillery, except that it is available **only** to the American player, and ships do not have to "prepare" in order to fire. To assign fire missions to one or more warships, first click on the ship button near the top of the Operations Sidebar. This causes the Battleship Window to appear at the bottom of the screen, which shows all the battleships in the game. A green dot next to the ship's name (gray on B&W monitors) means that ship is available to conduct a fire mission on the current turn. A red dot (white on B&W monitors) means it is not available, and tan (black on B&W monitors) means it has already been assigned a fire mission. To assign a target hex, move the cursor to the map and click on the hex you want, just like for regular artillery. If the hex is within range, the game assigns the fire mission to one of the available ships. If for some reason *you* wish to choose which ship is assigned to a particular target, click first on the ship's name within the window, and then on the target hex.

Each ship has barrage and support strengths and a maximum range just like regular artillery. All of the ships within a given type or class have the same range and fire strengths. Once assigned a target hex, a given ship conducts its fire mission exactly as if it were a regular artillery unit. However, ships are **not** subject to the attachment requirements that apply to regular artillery; a given ship may fire in support of units that are attached to a different HQ each turn.

To go to the next type (or class) of ship, click on the large ship button on the left side of the window. To close the Naval Support Window altogether, click again on the ship button at the top of the Operations Sidebar.

Note: although the game traces ship ranges from the gray ship images that are located at intervals along the east and north coasts of the Cotentin Peninsula, these ship images are *not* where the ships are actually located. Historically, even the destroyers could not have come in that close because the water there is too shallow. The ship images merely mark the approximate place where their fire is crossing the beach; in reality, the destroyers were usually located 5 hexes out from the beach, and the larger ships were usually 11 hexes out. All of the ships' ranges take into account their actual locations farther offshore than the gray images shown on the map.

Availability and Restrictions on Naval Support

Each ship can "carry" ammunition for a maximum of 8 turns of fire, but some of them begin some scenarios with less than that. The number after the word "Ammo" on the right side of the Ship Window is the number of turns of fire remaining for that ship. The turn after a ship's ammo is completely exhausted, it automatically returns to England for more. When a ship returns to England, it is usually available again in 9 turns.

Unlike other artillery units, ships do not have their barrage and support strengths altered by supply considerations, and they are not subject to any supply restrictions except that they must return to England (and thus be temporarily unavailable) as necessary to restock their ammo. When a ship is replenishing in England, the number following the words "Status: England" on the right side of the Ship Window is the number of turns remaining until that ship will be available again.

Except for supply considerations, naval barrage and support strengths **are** subject to **all** of the modifications to artillery fire strengths that are listed in the section on artillery.

Unlike regular artillery units, a maximum of **one** ship may be assigned per target hex each turn.

Naval support is **not** possible if the current weather is "storm".

Destroyers may **not** conduct fire missions on night turns. They were fully occupied with more important duties at night – namely, anti–torpedo boat and anti–submarine patrols.

Note that German coastal artillery units may **not** fire at warships; in reality, no Allied warship large enough to be included in the game was significantly damaged by German coastal artillery.

Naval Support and Victory Points

In mid–June, the Allied naval commanders in charge of the invasion fleet began to worry about the effect of the constant, heavy firing on the ships and their guns. The admiral in charge of all American naval forces off the Normandy coast actually had to warn the Army not to request so much fire support, because the ship's guns were being worn out! By mid–June, the Allies also needed to begin transferring as many ships as possible to the Mediterranean to support the upcoming invasion of southern

France. In order to re–create these historical considerations in the mind of the American player, there is a victory point penalty associated with utilizing naval support, especially after a certain date. Prior to the first game–turn of June 18, each turn that a ship conducts a fire mission, the American player loses the following number of victory points:

Ship Type	Victory Point Cost
Battleship	8 per ship per turn of fire
Heavy Cruiser	5 per ship per turn of fire
Monitor	2 per ship per turn of fire
Light Cruiser	1 per ship per turn of fire

There is no victory point penalty for fire missions conducted by destroyers prior to June 18. For more information on victory points, see "Victory Conditions".

Naval Support After June 17

Historically, naval gunfire support in the Utah area was canceled on June 18; by that time most of the heavy fighting was either over for the time being or had moved out of range of the ships. Another naval bombardment force then returned from England for one day on June 25 to support the assault on Cherbourg.

Naval support as described above is available to the American player until the last turn of June 17. At his option, the American player may request naval support after that date; however, beginning on June 18, a different group of ships is available, and the victory point penalty for each turn of fire is greater:

Ship Type	Victory Point Cost
Battleship	25 per ship per turn of fire
Heavy Cruiser	15 per ship per turn of fire
Light Cruiser	5 per ship per turn of fire
Destroyer	1 per ship per turn of fire

The ships that are available after June 17 are the ones that actually participated in the bombardment of Cherbourg on June 25; their total bombardment strength is slightly greater than the total of those ships that are available before June 18.

Air Interdiction and Ground Support

"If I didn't have air supremacy, I wouldn't be here." – Allied Supreme Commander Dwight D. Eisenhower on a Normandy road crowded with American vehicles, June 24, 1944

Airpower - Gold • Juno • Sword

 The Allies' naval superiority may have ensured a successful sea voyage and amphibious landing, but it was their air superiority that ultimately brought about victory. By D–Day, the Allies had almost total air superiority over Western Europe during daylight hours: they had 10,500 operational combat aircraft based in England to support the invasion (roughly 5,400 fighters and 5,100 bombers). The Luftwaffe had only 850 operational combat aircraft in Western Europe on June 6 (approximately 520 single–engine fighters and 330 bombers and twin–engine fighter–bombers),and received about that number in reinforcements during June. Although the Luftwaffe *did* attempt to intervene over Normandy, the overwhelming number of Allied fighters put the German pilots purely on the defensive and left them unable to accomplish anything by daylight, so night operations were the Luftwaffe's only remaining option. For several weeks, the German bombers were able to average between 100 and 200 sorties per night against Allied shipping and the beach areas, approximately 1/2 of which were in the GOLD • JUNO • SWORD area. These raids would have caused much more damage than they did were it not for the Allied anti–aircraft units, which forced the German bombers to fly at higher altitudes and reduced their accuracy. Still, several ships *were* sunk by German bombers during these night raids, and they also dropped most of the naval mines encountered by the Allies after June 12. The mines caused constant headaches for the Allies, and they did reduce the tonnage of supplies landed by a few percent per day. From the German standpoint that was certainly worth doing, especially since the Luftwaffe's losses at night were lower, but their efforts were still far less effective than the great storm June 19–22, which for those four days reduced the Allied supply tonnage landed by an average of 70 percent per day.

Airpower - Market-Garden

Airpower did not have as much influence on the outcome of Operation Market–Garden as it did on the Western front in

general. Although the Allies had nearly total air superiority over the Western front as a whole in 1944, they did not choose to take maximum advantage of it during Operation Market–Garden, because of their fear of mistaken air attacks on front–line Allied positions. In addition to reducing the effective level of Allied air superiority during Operation Market–Garden, this decision allowed the Germans to conduct some limited air activity as well. German air operations were also aided by the fact that the front was now much closer to the factories and major bases in Germany, and German aircraft production was approaching its wartime peak (which occurred in November 1944).

Airpower - Velikiye Luki

For a variety of reasons, airpower did not have as much influence on the outcome of the Russian Front in WWII as it did on the Western Front. One important factor was that neither side on the Russian Front ever had total air superiority, although the Germans were very close to it during the summer and early fall of 1941. The situation was different during 1942 and 1943, when the Germans were capable of no more than limited air superiority over whatever area of the front they considered most active or most important, and the Russians typically had limited air superiority elsewhere. Although greatly outnumbered later in the war, the Luftwaffe's tactical and technological superiority over the Red Air Force remained such that, even as late as 1945, the Luftwaffe was still able to manage "air parity" over whatever limited portion of the front it considered most critical.

Other factors in airpower's lack of decisiveness on the Russian Front were:

1. The very great distances involved, which for both sides tended to spread out the available airpower, and prevented its effects from being as concentrated as was typically the case on the smaller Western Front.

2. The primitive conditions and climatic extremes, which (for both sides) often reduced the average number of sorties that could be flown per aircraft per day, especially during fall, winter, and spring.

3. The relatively low number of German aircraft, especially after the summer of 1941, which prevented the Luftwaffe from fully exploiting its very large advantages over the Red Air Force in experience, training, aerial tactics, and technology.

4. The doctrinal limitations and technological backwardness of the Red Air Force, which, even late in the war, prevented it from using its great superiority in numbers to gain total air superiority. Except for the performance and outward appearance of most of its aircraft, the Red Air Force relied exclusively on WWI–era tactics and techniques. For example, Russian aircraft did *not* have radios, and could communicate with each other and with the ground *only* through visual signals and eye contact. Also, *only the squadron commanders* were issued maps and taught basic navigation principals; everyone else flew "by the seat of their pants!"

In the specific case of the battle for Velikiye Luki, both sides had very few aircraft operating in the vicinity during the time period covered by the game, which is one of the reasons why published historical data on the subject of airpower at Velikiye Luki is almost nonexistent. When placed into a larger strategic context, this is not surprising. Although of local importance, Velikiye Luki was definitely secondary to the much larger battle that was raging around Stalingrad at the same time, and which therefore had first call on all available reserves and reinforcements, especially aircraft, for both sides. Aircraft and air operations are included in the game, but they have much less influence, availability, and effectiveness than aircraft in many other WWII battles. Players should therefore expect air operations in Velikiye Luki to be a supplementary, rather than an essential or decisive, aspect of the game.

Airpower - Utah Beach

The Allies' naval superiority may have ensured a successful sea voyage and amphibious landing, but it was their air superiority that ultimately brought about victory. By D–Day, the Allies had almost total air superiority over Western Europe during daylight hours: they had 10,500 operational combat aircraft based in England to support the invasion (roughly 5,400 fighters and 5,100 bombers). The Luftwaffe had only 850 operational combat aircraft in Western Europe on June 6 (approximately 520 single–engine fighters and 330 bombers and twin–engine fighter–bombers). Although the Luftwaffe *did* attempt to intervene over Normandy, the overwhelming number of Allied fighters put the German pilots purely on the defensive and left them unable to accomplish anything by daylight, so night operations were the Luftwaffe's only remaining option. For several weeks, the German bombers were able to average between 100 and 200 sorties

per night against Allied shipping and the beach areas, approximately 1/4 of which were in the Utah area. These raids would have caused much more damage than they did were it not for the Allied anti–aircraft units, which forced the German bombers to fly at higher altitudes and reduced their accuracy. Still, several ships *were* sunk by German bombers during these night raids (including the American destroyer Meredith on June 8 just north of Utah Beach), and they also dropped most of the naval mines encountered by the Allies after June 12. The mines caused constant headaches for the Allies, and they did reduce the tonnage of supplies landed by a few percent per day. From the German standpoint that was certainly worth doing, especially since the Luftwaffe's losses at night were lower, but their efforts were still far less effective than the great storm June 19–22, which for those four days reduced the Allied supply tonnage landed by an average of 82 percent per day.

During the month of June, the Allies flew a total of 130,000 sorties in support of the invasion, the Germans flew less than 14,000 opposing it, and German aircraft losses over France exceeded 100 percent of their initial force.

When most people think of "air superiority", the first thing that comes to mind is direct ground support of the front–line combat units. While this occasionally produced spectacular results and was almost always good for the morale of the Allied troops, in the final analysis such attacks actually had less effect on the course of the battle than did the interdiction campaign, which began in earnest three months before the invasion. More important than bombing and strafing the front–line German positions, the interdiction effort against rear–area railroads, roads, and bridges sealed off the German forces in Normandy from reinforcement and supply. The Allied commanders knew that, in order to win, they had to have numerical and logistical superiority on the ground; they had to land men and equipment over the Normandy beaches faster than the Germans could move them there by road and rail. Air interdiction was the key; without it, the Germans would certainly have reinforced their army in Normandy faster than the Allies could have, and the German units would have been better–supplied and more mobile. The result would probably have been a larger and even more disastrous repeat of the 1942 fiasco at Dieppe. That the Allies used their airpower wisely and properly to "isolate the battlefield" is a tribute to the highest levels of their military leadership.

Air support for the American VII Corps in the Utah area was provided by the American 9th Air Force, which consisted of 18

groups (54 squadrons) of fighter–bombers and 11 groups (44 squadrons) of light and medium bombers (approximately 1200 aircraft in all). The 9th Air Force was responsible for providing ground support for the American units in Normandy, as well as air interdiction up to 200 miles behind the German lines. The American 8th Air Force, which contained the rest of the American fighter–bombers based in England and all of the American 4–engine heavy bombers based there, flew mostly interdiction missions over all of France during May, June, and July. In the game, the American player has some control over the activities of the 9th Air Force, but not the 8th. Thus, even if the American player consistently assigns *all* of the airpower under his control (the 9th Air Force) to ground support, there is still *some* interdiction taking place, due to the activities of the 8th Air Force and the British.

Daily Aircraft Allocation

During the 6:00 AM (8:00 AM in Velikiye Luki) Planning Phase at the beginning of each day, players may assign the airpower under their control to interdiction, ground support, or some combination of the two. **Air interdiction** operates "behind the scenes" to reduce enemy supply deliveries, delay enemy reinforcements, reduce the length of enemy supply lines, and reduce the strategic movement allowances of enemy units. **Ground support** consists of attacks conducted by aircraft against specific target hexes on the map, either independent of, or in combination with, attacks made by regular ground units.

To allocate your airpower for the day, click on either the Calendar or the weather picture within the General Sidebar, and then on the aircraft button near the lower right corner of the Calendar Window. This opens the Air Allocation Window at the bottom of the Calendar.

On the left side of the Air Allocation Window are five buttons that are used to determine what portion of your airpower is assigned to interdiction and what portion is available for ground support; click on the one you want. "Minimum" means minimum interdiction (and thus maximum ground support); "Maximum" means maximum interdiction (and thus **no** ground support). The

middle setting ("Moderate") is the one that was normally in effect historically, and this is also the default setting that is in effect at the beginning of each scenario unless you change it.

Besides choosing an interdiction level, you may also decide which of the daylight turns of the upcoming day you want ground support to be available. A green aircraft silhouette within the weather box for that turn (along the right edge of the Calendar) means that ground support will be available on that turn. To allocate or cancel ground support for a particular turn, click on the appropriate box. Note that ground support is never available on night turns. **The more turns that ground support is available, the smaller is the number of ground support missions that will probably arrive on any given turn**. The historical setting is for ground support to be available on all three daylight turns, and this is also the default setting that is in effect at the beginning of each scenario unless you change it.

To close the Air Allocation Window, click again on the aircraft button near the lower right corner of the Calendar Window (or you can close the whole Calendar Window by clicking on the close box at the upper left corner).

Note: the effects of air interdiction and the numbers of ground support missions that actually arrive are severely limited in bad weather.

Ground Support

To request ground support, first click on the aircraft button at the top of the Operations Sidebar. This causes the Ground Support Window to appear at the bottom of the screen. There are two different types of ground support missions: fighter–bombers and light/medium bombers. Clicking on the large aircraft button on the left side of the Ground Support Window alternates between these options.

To assign either type of mission, click on the desired target hex on the map when the option you want is showing on the aircraft

button. To close the Ground Support Window, click again on the aircraft button at the top of the Operations Sidebar.

Unlike ships and regular artillery units, aircraft have a barrage strength only, and **all** ground support missions are always conducted as barrage attacks. Aircraft do **not** have a support strength and cannot be used to add to the defense strength of a friendly ground unit. This is because the equipment and procedures that allowed front–line forward air controllers to talk directly to pilots in the air were not in common use until after the time period covered by the game.

Light-Med Bomber
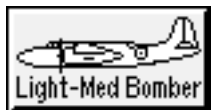
Unlike other types of barrage attacks, ground support **always** carries with it a risk that the planes will attack the **wrong** target hex (even one occupied by friendly units!). The chances of a mistaken attack are less for fighter–bombers, ground attack planes and dive bombers, and greater for light/medium bombers. For all types of aircraft, the chances of a mistaken attack are increased by bad weather (i.e., sky conditions) and enemy anti–aircraft fire. Finally, in Velikiye Luki, Russian aircraft are more likely to make a mistaken attack and hit the wrong target hex that German aircraft.

As you would expect, a given ground support mission is more likely to be carried out if the weather is good, and less likely to be carried out if the weather is bad. Also, your decisions regarding daily aircraft allocation may either increase or reduce the chance that a given ground support mission will be carried out. Beyond these general statements, however, you do not know ahead of time exactly how many ground support missions will be *carried out* on any given turn. You may *assign* target hexes for as many missions as you wish (up to the indicated maximum), but the more missions you request, the smaller is the chance that any particular one of them will be carried out. The reason for representing air attacks in this manner is that, in reality, ground commanders in WWII almost never decided which air units were going to attack which targets. They also usually did not know which air units or how many aircraft were actually available at any given time; they simply made requests for ground support, which the air commanders responded to as best they could.

Each turn, a maximum of one ground support mission per target hex may be requested by each side. Ground support is **never** available on night turns.

Note, that in Utah Beach and Gold • Juno • Sword some German air attacks against the invasion beach hexes occur regardless of whether the "Total Allied" Air Superiority option is in effect. Also note that these attacks often occur on night turns. These attacks are **not** considered "ground support" for game purposes, and the German player has **no** control over the activities of these aircraft. These attacks represent strategic–level German air operations that are beyond the control of the German player, and are analogous to the interdiction activities of the American 8th Air Force and the British that benefit the American player. **All** German air attacks made against an invasion beach hex (including the strategic missions described above) can reduce American supply delivery and/or inflict losses to American units in the target hex. The American player can minimize the effect of these attacks by keeping as many of his anti–aircraft units as possible close to the invasion beaches and in a favorable supply state.

Finally, remember that, regardless of how many aircraft are *theoretically* available, the number of air attacks that are carried out during the Execution Phase of a particular turn is **very** dependent on the current weather (sky conditions) that turn. If the weather is bad and prevents the planes from flying, or causes them to miss their targets . . . well, those are the fortunes of war. You should consider the weather forecast for the day when planning your daily aircraft allocation (see "Weather Forecasts").

Anti–Aircraft Fire

In addition to their capabilities as normal ground combat units, anti–aircraft units also reduce the strength of enemy air attacks that take place within their range, and increase the chance that these air attacks will miss their intended target hexes.

For anti–aircraft purposes only, heavy anti–aircraft units have a maximum range of 5 hexes, and light anti–aircraft units have a maximum range of 2 hexes.

Prior to resolving each air attack, the game automatically totals the current enemy anti–aircraft strength within range of the target hex, and reduces the strength of the air attack by a percentage proportional to that total. Anti–aircraft fire *also* increases the chance that the air attack will miss its intended target hex. The more anti–aircraft units that are within range of a given target hex, the greater both of these effects will be.

All anti–aircraft fire has a greater effect in good weather (sky conditions), and a lesser effect in bad weather. Also, the higher the supply state of the anti–aircraft units, the greater the effect they have on enemy air attacks within their range.

Combat

"War is sweet to those who have never experienced it." – Greek Philosopher Pindar, circa 430 B.C.

Except for artillery and aircraft, all units must be adjacent to enemy units in order to participate in combat.

Combat occurs during the Execution Phase of the game–turn. For each battle, the game calculates (and may modify) the attack and defense strengths, determines (and may modify) the initial combat odds, determines the result of the battle, and implements the result.

Attack

In general, units that have an attack strength greater than zero may conduct four different types of attacks: **probe**, **assault with no advance**, **assault**, and **all–out assault**. In Velikiye Luki, Russian units that have an attack strength greater than zero may conduct probes and all–out assaults, but **not** assaults without advances or ordinary assaults. In each case and for both sides, the hex to be attacked must be an adjacent hex, and an advance into it after the attack may be prevented by movement considerations such as terrain costs or enemy zones of control.

Units on both sides with an attack strength of zero (such as artillery and HQ units) may **not** conduct probes, holding attacks, assaults, or all–out assaults. Offensive artillery fire missions *are* attacks, but are **not** considered to be any of the four types of attacks listed above; barrage strength should not be confused with attack strength.

More than one unit may attack the same hex at the same time. However, if the "One Division Per Attack" Realism Option is in effect, **all** the units which attack the **same** hex on the **same** turn must be attached to the **same** HQ (except for air support).

Finally, note that attacks which include units assigned to different attack options (probe, all–out assault, etc.) are resolved as the majority, or numerical average, of the different types. For example, if one German unit is assigned to probe and two others

are assigned to assault, all as part of the same attack, the attack is resolved as an assault. The individual units participating in the joint attack still receive the benefits (or suffer the penalties) of their own particular orders, such as reduced losses for units assigned to probe, etc.

Probe

A probe is a careful, cautious attack to obtain information and/or minimize the risk of losses to the attacking unit. A unit that probes a hex containing enemy units will probably engage in combat with them (depending on what the enemy units do), but the results are less "bloody" (for both sides) than an assault. All other factors being the same, a unit conducting a probe suffers only half the losses of a unit conducting a regular assault.

Assault with No Advance

An assault with no advance is a "holding attack:" a conventional, determined attack intended to inflict casualties on the enemy and/or prevent the enemy from moving or carrying out other activities, but which is **not** intended to occupy ground or break through enemy lines. An assault with no advance is resolved in the same manner as an "ordinary" assault, except that units conducting this type of attack will **not** advance after the battle, regardless of their success. Units conducting an assault with no advance **may** be forced to retreat, if their attack fails. Note that in Velikiye Luki, Russian units may **not** conduct assaults without advances.

Assault

An assault is a conventional, determined attack. A unit that assaults a hex containing enemy units will probably engage in combat with them (depending on what the enemy units do). Note that in Velikiye Luki, Russian units may **not** conduct "ordinary" assaults, only all–out assaults.

All–Out Assault

An all–out assault represents a maximum effort on the part of the attacking unit. A unit assigned to all–out assault therefore has an increased chance of success; however, it also runs the risk of greatly increased losses if its attack fails.

Units assigned to all–out assault use supply normally (i.e., the normal amount for whatever supply state they are in). This is because an all–out assault represents more determination *on the part of the men*, and that does not necessarily involve a greater attack strength or more ammunition expenditure.

Attacks and Stacking

Although it is possible to assign probe, assault with no advance, assault, or all–out assault orders to all the units in a hex that have an attack strength, the maximum number that may use their full attack and armor strengths is equal to two–thirds of the stacking limit in that hex. Artillery units are not affected by this restriction. In other words, for almost all the hexes on the map, a maximum of two battalions from that hex may use their full attack and armor strengths during the Execution Phase. This is because in most hexes there is no room on the front line for more than two battalions, but there is room for a third one in the rear of the hex. If you assign more than two–thirds of the stacking limit in a hex to attack, the game conducts the attack using the fraction of the total attack and armor strength that corresponds to two–thirds of the stacking limit (usually six–sevenths, three–quarters, or two–thirds, for 7, 8, and 9 company–equivalents, respectively). Regardless of this "two–thirds" limit, all the units assigned to attack are still eligible to participate in an advance after combat (except those conducting holding attacks), and all are also liable to suffer losses and/or retreat if the combat result is unfavorable.

Attacks and Zones of Control

Units that begin a turn in an enemy zone of control are **not** required to attack. However, if they do attack, their advance after combat may be hindered by the zones of control of nearby enemy units, just as ordinary movement would be. To prevent or minimize the negative effects of enemy zones of control on your movement and advances after combat, you should assign separate attacks against all enemy units whose zones of control might cause problems. These separate attacks **may** consist exclusively of artillery and/or air support; there is no requirement that they include front–line ground units. To experienced wargamers, these extra attacks are known as "soak–off" attacks.

The reason for making these extra attacks is that during **every** attack with final odds of at least 1:4, the zones of control of the

defending units lose their ability to block enemy movement. This effect begins when the attack occurs, and lasts for the remainder of the Execution Phase. When you make extra attacks in order to inhibit the zones of control of nearby enemy units that are not the prime targets of your attack, the units conducting the prime attack may be able to advance farther after combat.

Modifications to Attack Strengths

In order to use its attack strength, a unit must be assigned to conduct either a probe, an assault with no advance, an assault, or an all–out assault. Artillery and HQ units always have an attack strength of zero, and thus may never conduct probes, holding attacks, or assaults. Other units may have their attack strength modified by one or more of the following considerations. If the cumulative effect of the following modifiers reduces a unit's attack strength to zero (when rounded to the nearest integer), it may not conduct probes, holding attacks, or assaults.

Supply

Supply State	Effect on Attack Strength
Attack	increased by 50 percent
General	normal
Defensive	halved
Minimal	quartered
None	quartered

Terrain

Terrain Type	Effect on Attack Strength
Swamp	halved (from swamp for all units) halved (into swamp for armored and motoriz units)
Polder	halved (into or out of polder for all armored and motorized units)
River	halved (across river for all non–armored and non-motorized units, regardless of bridges) quartered (across river for armored and motorized units, regardless of bridges

Major River		quartered (across major river for all units, regardless of bridges)
	Hill	reduced by 25 % (uphill for all non–artillery units)
		increased by 25 % (downhill for all non–artillery units)

Terrain and Ground Conditions - Velikiye Luki

Terrain Type	Ground Condition	Effect on Attack Strength
River	Light Freeze	halved (across river for all non–armored and non–motorized units, regardless of road hex–sides)
		quartered (across river for armored and motorized units, regardless of road hex–sides)
River	Hard Freeze	none
River	Deep Snow	none
Lake	Light Freeze	impassable for all units
Lake	Hard Freeze	halved (from lake for all non–artillery units)
Lake	Deep Snow	same as clear terrain
Clear	Deep Snow	halved (from hex for all non–armor, non–artillery units)

Disruption

Each point of disruption reduces a unit's attack strength by 3.3 percent of its current value, **after** modification for supply and terrain.

Fatigue

Each point of fatigue reduces a unit's attack strength by 3.3 percent of its current value, **after** modification for supply and terrain.

For example, if a full–strength British infantry battalion with a "normal" attack strength of 8 is in attack supply, its attack

strength is increased to 12. If it has a disruption rating of 2, its attack strength is reduced by 6.6 percent of 12 (or 0.8) to 11.2, and if it has a fatigue rating of 3, its attack strength is reduced by a further 9.9 percent of 12 (or 1.2) to 10. Its final modified attack strength in this situation is therefore 10.

Defend

Each unit has a defense strength that is used when it comes under attack. There are three different types of defense that may be selected: **retreat if attacked**, **defend if attacked**, and **hold at all costs**. Unlike movement and attack, a unit (of either side) that is assigned to defend may also conduct one or more of the secondary actions shown to the right of the "Defend" button within the Command Box. Note that each type of defense may be exercised either with or without the benefits of being dug in or fortified; being dug in or fortified does **not** imply a particular type of defense.

Retreat If Attacked

This causes the unit to automatically retreat after combat **if** it is subject to an assault with no advance, regular assault, or all–out assault by adjacent enemy units at a final combat odds of 1:1 or higher. In addition, any combat losses that the retreating unit receives in such an attack are halved. A retreat is made only if the unit is attacked by **adjacent** enemy units at 1:1 odds or higher; if it is attacked by artillery or aircraft only, the combat is resolved as if the unit were under "Defend If Attacked" orders. Also, the retreat hex is always picked for you by your staff assistant. Note that this option is not available to the Russians in Velikiye Luki.

Defend If Attacked

This represents a standard defense; no special conditions apply. This is also the default defense option that is always used when a unit comes under attack while moving or conducting an attack of its own.

Hold At All Costs

This represents a maximum defensive effort. The higher the unit's current morale, the greater the *probability* that it will stay in place and take additional losses rather than

retreat. There is no *guarantee* that it will always do so.

Defense and Stacking

Depending on the type of combat, an attack may affect all or just some of the defending units in a hex. Artillery and air attacks usually affect all the units in the target hex, while probes and assaults may or may not. In the case of artillery and/or air attacks against hexes that are **not** being attacked by adjacent enemy units, the total attack strength is applied as a separate attack against **each unit** in the target hex.

In the case of units that are attacked by adjacent enemy units, the maximum number of defending units that may use their full defense and antitank strengths is equal to two–thirds of the stacking limit in that hex. If the hex contains less than or exactly two–thirds of its stacking limit, all the units in the hex use their full defense and antitank strengths to defend against the attack. If the hex contains more than two–thirds of its stacking limit, the game conducts the defense using the fraction of the total defense and antitank strength that corresponds to two–thirds of the stacking limit (usually six–sevenths, three–quarters, or two–thirds, for 7, 8, and 9 company–equivalents, respectively). Any losses are distributed among all the defending units. If the defense is unsuccessful and results in a retreat, all the units in the defending hex must either retreat or take additional losses.

Modifications to Defense Strengths

The effects of the following modifiers are cumulative; however, a unit's defense strength may never be reduced to less than 1 (rounded to the nearest integer).

Strategic Movement

A unit conducting strategic movement (either independently or in combination with riding, automatic, stack, or divisional movement) has its defense strength halved.

Terrain

A unit defending in a bunker or a beach bunker has its defense strength **multiplied by 2.5**, and a unit defending in a fortress hex has its defense strength **tripled**.

Supply

Supply State	Effect on Defense Strength
Attack	increased by 50 % against attacks by adjacent enemy units; normal against pure artillery or air
General	normal
Defensive	normal
Minimal	halved against attacks by adjacent enemy units; normal against pure artillery or air
None	halved against attacks by adjacent enemy units; normal against pure artillery or air

Field Fortifications

Type	Effect on Defense Strength
Dug In	variable increase, up to 50 %
Fortified	variable increase, up to doubled

Disruption

Each point of disruption reduces a unit's defense strength by 3.3 percent of its current value, **after** modifications for strategic movement, supply, terrain, and field fortifications.

Fatigue

Each point of fatigue reduces a unit's defense strength by 3.3 percent of its current value, **after** modifications for strategic movement, supply, terrain, and field fortifications.

For example, if a full–strength German infantry battalion with a "normal" defense strength of 9 is in minimal supply, its defense strength is halved to 4.5 against attacks by adjacent British units. If it is alone in a hex that also contains a "dug in" marker of size 3 or more, its defense strength is increased by 50 percent to 6.75. If it has a disruption of 1, its defense strength is reduced by 3.3 percent of 6.75 (or 0.22) to 6.53, and if it has a fatigue of 6, its defense strength is reduced by a further 19.8 percent of 6.75 (or 1.34), to 5.19. Its final modified defense strength against attacks by adjacent British units in this situation is therefore 5.19.

Modifications to Combat Odds

After the attack and defense strengths for a battle are calculated and modified, the game divides the total modified attack strength by the total modified defense strength to arrive at an initial odds ratio for that battle. The following considerations may then modify the initial odds ratio: surprise (see below), defender's terrain, regimental integrity, armor support, engineer support, and morale. Most of these odds modifications apply only when the combat involves enemy units in an adjacent hex; the only ones that apply to an attack made exclusively by artillery, ships, or aircraft are those for the defender's terrain. When applicable, all odds modifications are cumulative.

Defender's Terrain

Terrain Type (Defender's hex)	Effect on Final Combat Odds
Clear	none
Polder	none
Swamp	Reduced by one
Beach	Reduced by one
Invasion Beach	Reduced by one
Bocage	Reduced by two
Forest	Reduced by three
Village	Reduced by two
City	Reduced by three
Bunkers	Reduced by three
Beach Bunkers	Reduced by three
Fortress	Reduced by three
Stream	none
River	none
Major River	none
Lake	none

Surprise

In Velikiye Luki, whenever German Brandenburg commando units participate in an attack while completely hidden from the Russian player, the odds of the attack are increased by three.

Regimental Integrity

In addition to two or more infantry battalions, virtually all WWII infantry regiments contained several smaller, specialized support units of various types, such as artillery sections, antitank and mortar companies, engineer and recon platoons, the regimental HQ company, etc. The odds modification for regimental integrity represents the presence and effect of these small units, which are not included separately in the game but which are assumed to be located with the majority of the regiment. It is also an incentive to follow the historical practice of keeping the battalions of a regiment together if possible.

In general, **infantry** and **airborne battalions** that are part of an **infantry** or **airborne regiment** are eligible to receive a favorable modification to the odds when they participate in combat with an **adjacent** enemy unit.

In order for a unit to receive this modifier, there must be **another** unit of the **same** regiment located within **two** hexes of the battle hex at the instant of combat (regardless of attachments). Each side may receive a maximum of **one** odds adjustment for regimental integrity per battle. If the attacker has regimental integrity, the combat odds are increased by one; if the defender has it, they are decreased by one; if both have it, the two odds adjustments cancel each other out and there is no net odds adjustment.

In the case of an attack involving only artillery, ships, or aircraft, neither side receives an adjustment for regimental integrity.

Brigade HQ units do **not** automatically provide integrity benefits to infantry units attached to them.

For an explanation of how to read the battalion and regimental designations on the units, see "Units."

Armor Support

The combat value of armored vehicles in WWII was not a constant; their value depended very much on the specific details of each individual battle, as well as the characteristics of the vehicles themselves. In some battles, armor was the crucial, deciding factor; in other

battles, it made little difference whether armor (or *that* armor) participated or not.

In the Commemorative Collection™ games, the most important measure of the combat value of an armored unit is its armor strength. Armor strength is manipulated separately from attack and defense strength, and therefore serves as a way for armor to affect the combat odds only when the circumstances favor the use of armor.

Every unit in the game has an antitank strength, which is also manipulated separately from attack and defense strength. A unit's antitank strength is the primary factor that determines how much effect enemy armor has against that unit.

Armor and mech recon units (only) have an armor strength that *may* increase the combat odds when the unit is participating in an attack. For each combat where an armor or mech recon unit conducts an attack, the game compares the total modified armor strength of the attacking units to the total modified antitank strength of the defending units. If the attacker's total modified armor strength is **greater** than the defender's total modified antitank strength, the combat odds for that battle are increased. The size of the odds increase is determined by dividing the attacker's total modified armor strength by the defender's total modified antitank strength. The odds increase is thus at least 1.0, and may be much higher. Only **attacking** units are eligible to receive an odds modification for armor support.

Armor Strengths

The following modifiers apply to armor strengths. If the cumulative effect of these modifiers (rounded to the nearest integer) reduces a unit's armor strength to zero, it has no ability to increase the combat odds.

Supply

Supply State	Effect on Armor Strength
Attack	increased by 50 %
General	normal
Defensive	halved
Minimal	halved
None	quartered

Terrain

Terrain Type	Effect on Armor Strength
Hill	reduced by 25 % (attacking uphill) increased by 25 % (attacking downhill)
Dike	reduced by 25 % (attacking across)
Swamp	halved (both into and out of swamp)
River	halved (across river at bridge; in Velikiye Luki - light freeze only). quartered (across river not at bridge; in Velikiye Luki - light freeze only)
Major River	halved (across river at bridge) quartered (across river not at bridge)

Disruption

Each point of disruption reduces a unit's armor strength by 3.3 percent, **after** modification for supply state and terrain type.

Fatigue

Each point of fatigue reduces a unit's armor strength by 3.3 percent, **after** modification for supply state and terrain type.

For example, if a full–strength German tank company with a "normal" armor strength of 6 is in attack supply, its armor strength is increased to 9. If it is ordered to attack across a river (not at a bridge), its armor strength is quartered to 2.25. If it has a disruption of 2, its armor strength is reduced by 6.6 percent of 2.25 (or 0.15) to 2.1, and if it has a fatigue of 3, its armor strength is reduced by a further 9.9 percent of 2.25 (or 0.22) to 1.88. Its final modified armor strength in this situation is therefore 1.88, and it is unlikely that this is enough to increase the combat odds in most attacks.

Antitank Strengths

The following modifiers apply to antitank strengths. All effects are cumulative, except that a unit's antitank strength may never be reduced to less than 1 (when rounded to the nearest integer).

Strategic Movement

A unit conducting strategic movement (either independently or in combination with riding, automatic, stack, or divisional movement) has its anti–tank strength halved.

Supply

Supply State	Effect on Antitank Strength
Attack	increased by 50 %
General	normal
Defensive	normal
Minimal	halved
None	halved

Terrain

Terrain modifications to antitank strength apply to the **defender** only:

Terrain Type (Defender's hex)	Effect on Antitank Strength
Clear	none
Polder	none
Beach	none
Invasion Beach	none
Swamp	none
Bocage	doubled
Forest	multiplied by 2.5
Village	multiplied by 1.5
City	doubled
Bunker	doubled
Beach Bunker	doubled
Fortress	tripled
Stream	none
River	none
Major River	none
Hill	none
Dike	none

Field Fortifications

Type	Effect on Antitank Strength
Dug In	variable increase, up to 25 %

| Fortified | variable increase, up to 50 % |

Disruption

Each point of disruption reduces a unit's antitank strength by 3.3 percent, **after** modification for strategic movement, supply state, terrain, and field fortifications.

Fatigue

Each point of fatigue reduces a unit's antitank strength by 3.3 percent, **after** modification for strategic movement, supply state, terrain, and field fortifications.

For example, if a full–strength German infantry battalion with a "normal" antitank strength of 4 is in minimal supply, its antitank strength is halved to 2. If it is located in a city hex, its antitank strength is doubled (back to 4). If it is alone in a hex that also contains a "dug in" marker of size 3 or more, its antitank strength is increased by 25 percent to 5. If it has a disruption of 1, its antitank strength is reduced by 3.3 percent of 5 (or 0.16) to 4.84, and if it has a fatigue of 6, its antitank strength is reduced by a further 19.8 percent of 5 (or 0.99), to 3.85. Its final modified antitank strength in this situation is therefore 3.85.

Engineer Support

 Although they could (and often did) fight as regular infantry, combat engineers were actually support troops, specially trained and equipped for assaulting fortified positions, crossing rivers, and fighting enemy armor at close range.

Under certain circumstances, engineer units provide a favorable odds modification to the attacker. If the defending units occupy a village, city, bunker, beach bunker, field fortification (either type), and/or are across a river or major river from the attacker, the combat odds are increased by one for each attacker's hex which contains an engineer unit that is using its attack strength in that battle.

 Note that in Market-Garden and Gold Juno Sword, the British bridge units **are** engineer units for the purpose of increasing the odds of British attacks made across river and major river hexsides **only**.

Note that in Velikiye Luki, the German 3rd Bridge Battalion **is** an engineer unit for the purpose of increasing the odds of German attacks made across river hexsides **only**. Construction units are **never** considered to be engineers for the purpose of increasing combat odds.

Morale

As discussed in an earlier section of this manual, morale is a measure of the quality of a unit, independent of its size or strength.

For each battle, the game compares the average current morale of the attacking units to the average current morale of the defending units (including all the artillery, and air support for both sides, and weighted for whether any of the participating units are companies in size). If the attacking units have the higher average morale, the combat odds are increased by the difference between the attacker's and defender's average morale. If the defending units have the higher average morale, the combat odds are decreased by the difference in average morale between the two sides. If both sides have the same average morale, there is no odds modification due to morale.

Example of Odds Modification

If the total modified British attack strength for an assault is 46, and the total modified German defense strength is 10.5, the initial odds ratio for the battle is 46/10.5 or 4.38:1. If the German units are located in a village hex, the odds are reduced by 2 to 2.38:1. If the British have regimental integrity for the battle and the Germans do not, the odds are increased by 1 to 3.38:1. If the total modified British armor strength in the battle is 12, and the total modified German antitank strength is 9, the odds are increased by 12/9 or 1.33, to 4.71:1. If the German units are dug in, and one British engineer unit is participating in the attack, the odds are increased by 1 to 5.71:1. And finally, if the average morale of all the British units participating in the attack is 7, and the average morale of all the German units participating is 6.6, the odds are reduced by .4 (7 – 6.6), to 5.31:1. The final odds for this battle are therefore 5.31:1.

Combat Sequencing and Results

Both movement and combat take place throughout the Execution Phase, and battles are resolved as they occur within the 4–hour

time span represented by the Execution Phase. The V for Victory™ system uses a continuous–odds algorithm to determine combat results, in which all fractions are significant and retained. The rounding off of combat odds to simple integers (such as 3:1 or 5:1), so common in most wargames, does not occur. Combat odds of 3.1:1 are different, and better than, 3:1. There is no set minimum or maximum odds.

When a battle is resolved, the results may include losses, retreats, and/or advances. Units may lose one or more strength points, they may retreat one or more hexes, or they may advance one or more hexes. Combat may also change the morale, disruption, and fatigue of the units involved.

Losses

In general, greater losses are suffered by units that lose a battle, although the winner usually suffers losses as well, and it is *possible* for the winner's losses to exceed the loser's (known since Roman times as a Phyrric victory). Losses are suffered in the form of a reduction in attack and defense strengths of the affected unit by one or more strength points; armor, antitank, barrage, and support strengths may also be reduced. All other factors being equal, losses suffered by armored and mech recon units, company–sized units, units which are conducting probes, and units which have been ordered to retreat if attacked are lower than those suffered by other units. Losses suffered by units which fall into more than one of the above categories are lower still.

Retreats

Units that lose a battle may be required to retreat one or more hexes. The game conducts the retreat according to the following priorities:

1. Away from enemy units and zones of control.

2. Towards a friendly supply source.

3. Through the terrain that costs the fewest movement points.

Units do not retreat into or through prohibited terrain or enemy–occupied hexes. Units *may* retreat through permissible terrain in enemy zones of control if no other retreat path exists; however, in this case the retreating units suffer additional losses, and the

presence of other friendly units does **not** negate the enemy zones of control for the purpose of inflicting extra losses. For each hex containing an enemy zone of control that the retreating unit must enter, its losses from that combat are increased by 25 percent. In the case of a retreating stack, **each** unit in the stack suffers these additional losses. If no permissible retreat path exists, a unit required to retreat stays in place and suffers additional losses instead.

Retreat results never apply to units with a movement allowance of zero, or to units in a bunker, beach bunker, or fortress hex. Also, retreat results do not apply to units defending solely against artillery or air attacks, unless the defending units are also conducting a probe or assault.

Attacking units that lose a battle are not required to retreat unless they are making their attack from a clear terrain, lake or polder hex. The maximum distance that an *attacking* unit has to retreat is one hex.

Advances

If units defending against adjacent enemy units are eliminated or forced to retreat, the units conducting the attack may be able to advance into the defender's hex, and possibly farther. Units do not advance into or through prohibited terrain or enemy–occupied hexes. Units may advance into or out of an enemy zone of control; however, such advances may be hindered by the enemy zones of control, just as ordinary movement would be. To minimize the negative effects of enemy zones of control on your movement and advances after combat, you should assign separate attacks against all enemy units whose zones of control might cause problems. These separate attacks **may** consist of artillery and/or air support only; there is no requirement that they include front–line ground units. To experienced wargamers, these extra attacks are known as "soak–off" attacks.

The reason for making these extra attacks is that in **every** non–interdiction attack with final odds of at least 1:4, the zones of control of the defending units lose their ability to block enemy movement. This effect begins when the attack occurs, and lasts for the remainder of the Execution Phase.

The game conducts all advances along the defender's path of retreat. Any terrain other than clear or polder slows the advance and thus tends to "break contact" between the attacker and defender. Units with a higher movement allowance and/or a

higher morale tend to advance farther. However, to reflect doctrinal differences as well as actual combat performance, British units never advance more than one hex after combat.

Finally, note that no unit may advance after combat across a major river hexside unless:

1. That hexside contains an intact bridge, or

2. The advancing unit is ferried across the major river by an engineer unit.

Battle Reports

There are two types of Battle Reports: **Real Time Battle Reports** briefly appear within a Message Window when the battle is resolved during the Execution Phase. **After Action Battle Reports** contain more detailed information, and can be inspected at your leisure during the After Action Phase. Both types of Battle Reports can be turned "on" or "off" by selecting the appropriate item from the Options Menu.

If "After Action Battle Reports" is "on," each turn ends with an After Action Phase. During this phase, each hex where a full–scale battle occurred is outlined in red, and each hex where interdiction was assigned is outlined in purple. On black and white monitors, these hexes are shown with thicker–than–normal solid and dashed borders, respectively. Clicking on one of these outlined hexes causes a Battle Report describing the battle in that hex to appear at the bottom of the screen.

After Action Battle Reports for full–scale battles have two parts: a general briefing, and a detailed accounting of the combat odds and odds modifications for that battle. You may view both of these by clicking on the buttons on the left side of the Battle Report Window.

Weather

"The effect of climate in Russia is that movement is impossible in the mud of spring and autumn, the heat is unbearable in summer, but winter is the worst of all. Climate in Russia is nothing but a series of natural disasters." – German General von Greiffenburg

In general, the weather in all V for Victory™ games has two components: sky conditions and ground conditions. **Sky conditions** are essentially independent of temperature, and refer only to cloudiness, precipitation, and flying weather. Sky conditions therefore affect air operations, which in turn affect ground support missions, air interdiction, supply ranges and deliveries, arrival of reinforcements, and strategic movement allowances. **Ground conditions**, on the other hand, are driven primarily by temperature, but also by precipitation. In some games in the V for Victory™ series, ground conditions can affect the movement and combat of most units.

Sky Conditions

The center portion of the General Sidebar contains a picture of the current sky condition, along with the current temperature in degrees Fahrenheit. There are six possible sky conditions in the V for Victory™ games: **clear**, **light overcast**, **moderate overcast**, **heavy overcast**, **snowing (which only appears in Velikiye Luki)** and **storm**. These sky conditions affect air operations, which in turn can affect ground support missions, air interdiction, supply ranges, supply delivery, and strategic movement. Sky conditions may also affect visibility, which in turn may affect movement rates and zones of control.

Not surprisingly, good sky conditions generally favor the player who has air superiority. When the weather is good, there are more ground support missions available, the effects of air interdiction on enemy movement and supply are increased, and less enemy supply can be delivered by air. Also, heavy overcast and storm conditions negate the beneficial effects of a full moon on movement and zones of control at night.

Clicking on the picture of the sky condition on the General Sidebar opens the Weather Window at the bottom of the screen, and holding the mouse button down opens a small message window which summarizes the effects of the current sky condition. (See "Weather Window" below.)

Ground Conditions - Market Garden

There is only **one** ground condition in Market–Garden, and that is "dry" (or normal) ground.

Ground Conditions - Velikiye Luki

There are three ground conditions in Velikiye Luki: light freeze, hard freeze, and deep snow. The current ground condition is shown within the Weather Window (see below). **Light freeze** conditions are in effect at the beginning of several scenarios, including "To The Rescue," "Red Storm," and the Campaign Game. Light freeze conditions last until the ice thickness reaches 12 inches (*normally* early December), when hard freeze begins. **Hard freeze** conditions are indicated graphically by a switch to lighter and whiter terrain colors on the map. Hard freeze lasts until the snow accumulation reaches 20 inches, when deep snow conditions begin. **Deep snow** conditions are indicated graphically by the disappearance of all water features, including rivers and lakes. During the time period covered by the game (mid–November to mid–January), both of the above changes in ground condition (from light to hard freeze, and from hard freeze to deep snow) are permanent, one–time only changes. Once frozen, lakes and rivers do not melt, and once on the ground, deep snow remains for the duration of the game.

During light freeze conditions (see "Movement"):

1. Lake hexes are impassable for all units.

2. River hexsides have significant combat effects, and are passable only for non–motorized, infantry–type units. (See "Terrain.")

3. Clear terrain and forest hexes have higher movement costs for all units.

During hard freeze conditions (see "Movement"):

1. Lake hexes may be entered by all units.

2. River hexsides become equivalent to stream hexsides for all purposes, lose their combat effects, and become only a minor obstacle to movement.

3. Clear terrain and forest hexes have lower movement costs for all units.

4. Field fortifications are more difficult to construct. (See "Field Fortifications.")

During deep snow conditions (see "Movement"):

1. Lake hexes become clear terrain for all purposes.

2. Rivers and streams disappear from the map.

3. All other terrain types have higher movement costs, except for ski units.

4. All artillery fire is halved, due to the cushioning effect of the snow.

5. Non–ski infantry–type units, plus all engineer, antitank, and anti–aircraft units attack out of clear terrain hexes at half strength, due to movement difficulties caused by the snow.

6. Field fortifications are more difficult to construct. (See "Field Fortifications.")

Game Options

There are a total of six weather options that may be selected at the beginning of each scenario. They are:

Historical. If you select this option, the turn–by–turn weather in the game will be identical to the real weather conditions recorded in the respective area during the time period covered by the game.

Realistic Probabilities - **Market Garden**. If you select this option, the turn–by–turn weather will be different from the actual, historical conditions, but the overall probabilities and average temperatures will be the same as they were in reality. The historical percentages of the five sky conditions under this option are as follows:

Clear	Light Overcast	Moderate Overcast	Heavy Overcast	Storm
1%	11%	42%	36%	10%

Less Cloudy. If this option is selected, the weather in the game will be less cloudy than it was in reality. This improves the availability and effectiveness of airpower, benefiting the side that has air superiority.

More Cloudy. If this option is selected, the weather will be more cloudy than it was in reality. This reduces the availability and effectiveness of airpower, hindering the side which has air superiority.

Colder. If you select this option, the average temperature in the game will be colder than it was in reality. Although this can have a significant effect on the ground condition in other V for Victory™ games, there is no effect in Market–Garden (other than to show the colder temperatures on the screen).

Warmer. If you select this option, the average temperature in the game will be warmer than it was in reality. Although this can have a significant effect on the ground condition in other V for Victory™ games, there is no effect in Market–Garden (other than to show the warmer temperatures on the screen).

Realistic Probabilities - **Velikiye Luki**. If you select this option, the turn–by–turn weather will be different from the actual, historical conditions, but the overall probabilities and average temperatures will be the same as they were in reality. The historical percentages of the five sky conditions under this option are as follows:

Clear	Light Overcast	Moderate Overcast	Heavy Overcast	Snowing
5%	19%	38%	31%	7%

Also, hard freeze and deep snow ground conditions will begin *approximately* on their historical dates (which are December 4 and December 10, respectively).

The last four weather options allow you to select whether the sky conditions in the game will be less cloudy or more cloudy than they were historically, and whether the average temperature in the game will be colder or warmer than it was historically. (Recall that temperature has a strong effect on ground condition.) There are many possible combinations, but the two that have the greatest effect on the game are:

Less Cloudy and Colder. If these two options are selected in combination, the weather will be less cloudy than it was in reality, and the average temperature in the game will be colder than it was in reality. This improves the availability and effectiveness of airpower, benefiting the side that has air superiority. It also reduces snowfall and snow accumulation, which improves the mobility of ground units by hastening the onset of hard freeze ground conditions, and by delaying the onset of deep snow.

More Cloudy and Warmer. If these two options are selected in combination, the weather will be more cloudy than it was in reality, and the average temperature in the game will be warmer than it was in reality. This reduces the availability and effectiveness of airpower, hindering the side that has air superiority. It also extends the duration of light freeze ground conditions and increases snowfall and snow accumulation, both of which reduce the mobility of ground units.

For additional information on these weather options and their effect on the game, see "Historical Options and Variants."

Realistic Probabilities - **Utah Beach**. If you select this option, the turn–by–turn weather will be different from the actual, historical weather, but each weather condition will occur the same *percentage* of the time as it actually did in Normandy in June 1944. These historical percentages are as follows:
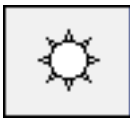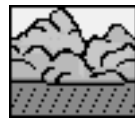
Clear	Light Overcast	Moderate Overcast	Heavy Overcast	Storm
4%	15%	37%	36%	8%

Weather Window

To open the Weather Window at the bottom of the screen, click on the picture of the sky condition on the General Sidebar. The Weather Window contains (from left to right): a picture of the current sky condition and temperature; three windows which show the current liquid water "excess", the current average snow depth in inches, the current average ice thickness on the rivers in inches, and the current ground condition. As mentioned above, in Operation Market–Garden there is never any snow or ice, and the ground condition is always "dry."

Weather Forecasts

Clicking on the calendar page within the General Sidebar causes the Calendar Window to appear. Among other things, the Calendar Window shows a pictorial forecast of the predicted sky conditions for each of the next five days. The forecast shown within each daily square on the Calendar is an average of the forecast sky conditions and temperatures for all six turns of that day. Temperatures are always in degrees Fahrenheit. To see the forecast sky conditions for each of the six turns of a particular day, click on the weather picture within one of the daily squares; the turn–by–turn forecast for that day appears on the right side of the Calendar. **Keep in mind that sometimes weather forecasts are right and sometimes they are wrong!**

Allied weather forecasts for Europe in the latter part of WWII were better and more accurate than German forecasts. This was because European weather systems tend to move from west to east, which means they cross over Britain and France before entering Holland. This aided the Allied meteorologists

considerably when making forecasts for Holland, since it allowed them to "see what weather was coming" before it reached Holland. This was an advantage the Germans did not have, since their access to weather data from western Europe was very limited during the time period covered by the game.   Therefore, in Market–Garden, the weather forecast shown to the Allied player is more likely to be accurate than the one shown to the German player, especially for the next two days.

German weather forecasts for European Russia in WWII were better and more accurate than Russian forecasts.   There were three reasons for this.   First, many European weather systems tend to move from west to east, which means they cross over Germany and Poland before entering the Soviet Union.   This aided the German meteorologists considerably when making their forecasts for Russia.   Second, the ability to "see what weather was coming" was an advantage the Russians did not have, since their access to west European weather data was very limited. (There was apparently no regular exchange of weather data between the Russians and the western Allies.) And finally, the Russian technical and scientific services, such as meteorology, were generally less advanced than those of Germany and the western Allies in WWII, which meant that the Russians could not even make the best use of what weather data was available to them.   Therefore, in Velikiye Luki, the weather forecast shown to the German player is more likely to be accurate than the one shown to the Russian player, especially for the next two days.

In Utah Beach the ability of the American and British meteorologists to make better weather forecasts than their German counterparts actually had a large effect on the degree of surprise that was achieved against the Germans on D–Day, and therefore on the success of the invasion itself.   The weather conditions over England and France on June 4th and 5th, 1944 were very bad (heavy overcast and storm), but the Allied forecast called for significant improvement on the 6th and 7th. The final decision on whether to launch the invasion or postpone it because of the weather was up to the Allied Supreme Commander, General Eisenhower.   He knew exactly what was at stake: if, after committing to "go", the prevailing storm conditions had continued through the 6th and 7th, the entire invasion probably would have failed.   In one of the great command decisions of history, Eisenhower took the gamble and trusted the weather forecast. The invasion fleet weighed anchor early on June 5th and began a difficult voyage south through high winds, driving rain, and very rough seas.

All that the Germans meteorologists knew on the 4th and 5th was that an Allied invasion was impossible in the current weather; they had no data to indicate that conditions were about to get much better. As a result, when dawn broke on June 6th under clearing skies and calming seas, the German commanders were "caught with their pants down". If the German meteorologists had access to the same weather data as their Allied counterparts, the entire German Army in France would probably have been on full alert!

Reinforcements

In many of the Commemorative Collection™ game scenarios, one or both sides receive reinforcements (additional units) during the course of the game. Unless delayed for some reason, reinforcements scheduled to arrive on a particular day appear on the map at the **end** of the Execution Phase of one of the turns of that day. Once they are on the map, reinforcements may be assigned orders like all other units.

To see what future reinforcements are available for your side and when and where they are currently scheduled to arrive, click on the calendar page within the General Sidebar. This opens the Calendar Window, which shows the days reinforcements are currently scheduled to arrive by means of ensigns (for the British player), stars (for the Russians) or crosses (for the German player). Clicking on one of these symbols causes the units that are scheduled to arrive that day to appear at the bottom of the screen, along with a red dot on the small inset map that shows where they are scheduled to arrive. Clicking on one of these reinforcing units causes the normal unit data that pertains to that specific unit to be displayed on the left and right sides of the window. If more than nine units are scheduled to arrive that day, a scroll button is active on the right side of the window. You can view additional "rows" of units by clicking on this scroll button.

HQ's that arrive as reinforcements are always in defensive supply when they arrive on the map. Assuming that they have and can keep a supply line after they are on the map, they remain in defensive supply until the next 6:00 AM (8:00 AM in Velikiye Luki) Planning Phase, when they are treated just like all other HQ's for supply allocation purposes.

Allied Reinforcements - Gold • Juno • Sword

All Allied reinforcements arrive on Invasion Beach Hexes. Reinforcements scheduled for any beach do not arrive during game–turns when the weather is storm; they are instead delayed until the next non–storm turn. In the unlikely event that any invasion beach hex is either occupied by or is adjacent to German units, Allied reinforcements scheduled to arrive at that beach arrive at an adjacent beach instead.

If an Air Superiority option other than "Total Allied" is in effect, Commonwealth reinforcements may also be delayed due to the effects of German air interdiction.

German Reinforcements

 All German reinforcements arrive on the south or east map edge. The normal entry locations are the primary roads on the south or east borders of the Campaign Game map. In the event that its normal entry point is occupied by an Allied unit or is in the zone of control of an Allied unit, a reinforcing unit instead enters at the nearest non–blocked map–edge road hex, or (in the unlikely event that all map–edge roads are blocked) at the nearest non–blocked, non–road map–edge hex.

German reinforcements are normally delayed by Allied air interdiction. The extent of the delay depends on the Air Superiority Option selected at the beginning of the game, the interdiction level selected by the Commonwealth player each day, and the turn–by–turn weather (better weather causes more delay).

Allied Reinforcements - Market Garden

Most British reinforcements arrive near the center of the southern map edge. However, early in the Campaign Game, the British and American airborne divisions receive reinforcements by air. Airborne reinforcements arrive at predetermined hexes within the map area.

In the event that the normal entry point for a non–airborne reinforcement is occupied by a German unit or is in the zone of control of a German unit, the reinforcing unit instead enters the map at the nearest non–blocked hex, after a slight delay. Airborne reinforcements may be delayed either by a German unit

in the arrival hex, or by storm or heavy overcast weather conditions. German zones of control alone do not prevent the arrival of airborne reinforcements.

German Reinforcements - Market Garden

German reinforcements arrive at a variety of map edge hexes located all around the Campaign Game map. The German player needs to remain alert for the arrival of reinforcements, so he does not lose any opportunities to move newly arrived units!

In the event that its normal entry point is occupied by an Allied unit or is in the zone of control of an Allied unit, a reinforcing German unit instead enters the map at the nearest non–blocked map edge hex, after a slight delay.

Russian Reinforcements - Velikiye Luki

Most Russian reinforcements arrive near the center of the eastern map edge. However, early in the Campaign Game, the 360th Rifle Division arrives at the southeast corner of the map, and in mid–December the 1077th Guards Rifle Regiment arrives on the north edge of the Campaign Game map, near the northeast corner.

In the event that its normal entry point is occupied by a German unit or is in the zone of control of a German unit, a reinforcing Russian unit instead enters the map at the nearest non–blocked map edge hex, after a slight delay.

Also, Russian reinforcements may be delayed due to the effects of German air interdiction.

German Reinforcements - Velikiye Luki

Most German reinforcements arrive at the southwest corner of the Campaign Game map. However, in the Campaign Game, German reinforcements also arrive on the north edge of the map (near the northwest corner), near the center of the south edge of the map, and in the center of the west edge of the map.

In the event that its normal entry point is occupied by a Russian unit or is in the zone of control of a Russian unit, a reinforcing German unit instead enters the map at the nearest non–blocked map edge hex, after a slight delay.

Also, German reinforcements may be delayed due to the effects of Russian air interdiction.

American Reinforcements - Utah Beach

Most American reinforcements arrive at Utah Beach. However, on the first turn of the Campaign Game, several glider units of the 82nd Airborne Division arrive south of St. Mere Eglise, and later in the Campaign Game the units of the 120th Infantry Regiment and the 83rd Infantry Division (plus attachments) arrive at Isigny (on the map edge southeast of Utah Beach).

Reinforcements scheduled for Utah Beach do not arrive during game–turns when the weather is storm; they are instead delayed until the next non–storm turn. In the unlikely event that the southern–most invasion beach hex is either occupied by or is adjacent to German units, American reinforcements scheduled to arrive at Utah Beach are delayed two days and arrive at Isigny instead. (The game assumes that they were diverted to Omaha Beach, and then moved to Isigny.)

If an Air Superiority option other than "Total Allied" is in effect, American reinforcements may also be delayed due to the effects of German air interdiction.

German Reinforcements - Utah Beach

All German reinforcements arrive on the south map edge. The normal entry locations are the primary roads at the southwest and southeast corners of the Campaign Game map. In the event that its normal entry point is occupied by an American unit or is in the zone of control of an American unit, a reinforcing unit instead enters at the nearest non–blocked map–edge road hex, or (in the unlikely event that all map–edge roads are blocked) at the nearest non–blocked, non–road map–edge hex.

German reinforcements are normally delayed by Allied air interdiction. The extent of the delay depends on the Air Superiority Option selected at the beginning of the game, the interdiction level selected by the American player each day, and the turn–by–turn weather (better weather causes more delay). Selecting an Air Superiority Option other than "Total Allied" at the beginning of the game usually causes German reinforcements to arrive earlier than they did historically.

Replacements

 All the armies represented in the V for Victory™ series maintained rear–area replacement organizations, whose purpose was to train new recruits and then process them as replacements for the various front–line combat units. The function of these replacement organizations is represented in V for Victory™ games by "replacement points." Both sides may use replacement points to rebuild engineer and infantry–type units that have suffered losses, and the Allied player has replacement points for British armored units as well. Units that have surrendered or been completely eliminated may **not** be rebuilt using replacement points. Replacement points may **not** be used to rebuild HQ's, antitank, anti–aircraft, or artillery–type units, and losses suffered by those kinds of units may **not** be replaced. (Exception: some HQ units which are eliminated in combat may be automatically replaced, but this does not involve the use of replacement points. See below.)

In order to use replacement points to rebuild a unit, first click on it, and then click on it again within the Unit Window to open the Command Box. Assign it one of the three types of defense, and then click on the "Replacement" button (illustrated above, and located above the "Admin" label within the Command Box). Finally, close the Command Box by clicking on the unit again.

Note that **no replacements** are available for **any** of the Allied airborne units (American, British, or Polish). This is due to a historical lack of available jump–qualified replacements, as well as a shortage of available transport space to deliver such replacements to the units.

In order to receive replacements, a unit may not be in a state of no supply, and it may not be in an enemy zone of control. Also, a unit may not move, attack, dig in, or fortify during the turn that it receives replacements. It may be recovering from disruption and/or fatigue. Both side's units may receive a maximum of one replacement point each per turn.

Each infantry replacement point restores one strength point of unmodified attack and defense strength to infantry and engineer units. Depending on the strength of the unit receiving the replacements, some antitank strength may be restored as well.

Each armor replacement point restores one strength point of unmodified attack and defense strength to armored units, plus a generally greater amount of unmodified armor and antitank strength. (Note that there is no separate button for armor replacement points; the correct type of replacement point is automatically used, depending on what kind of unit is receiving the replacements.)

Provided that each unit meets the conditions listed above, and subject to the total number of replacement points of that type currently available, there is no restriction on the number of *different units* that may receive replacements during the same turn.

Replacement points cannot be used to increase the strength of a unit above its normal full strength.

Commonwealth Replacements - Gold • Juno • Sword and Market Garden

Replacements available to all HQs

Inf-Eng Arty AA-AT Armor HQ Airborne

The British regimental system formed the basis of the British Army. Under this system, British infantry and armored regiments were administrative formations only, *not* combat formations. Each regiment consisted of a variable (and sometimes large) number of battalions, and each regiment drew virtually all of its recruits from its own limited geographic area (typically only one county or city). Individual battalions were then assigned to brigades for combat purposes, without regard for regimental affiliations. Regardless of which brigade or division they were assigned to, the individual battalions maintained a permanent affiliation with their home regiment for training, administrative, and historical purposes. All replacements were trained and delivered to individual battalions by their own regiments, not by some generic army–wide replacement structure, as in other armies. Promotions and transfers generally took place only within regiments; British soldiers rarely transferred from one regiment to another. Thus, most British soldiers maintained a permanent, life–long affiliation with a single regiment, which added greatly to the importance of unique regimental insignia and traditions, as well as the troops' sense of

professionalism, cohesion, and belonging. The negative aspects of the regimental system were that it fostered clan–like suspicion, mistrust, and even hatred between different regiments, as well as less flexibility with regard to administrative matters, particularly the flow of replacements. Since almost all British replacements were already earmarked for specific units from their first day of training and could not simply be sent wherever they were needed the most, ample notice and planning time was required before an offensive, to insure that replacements would be available when needed. This was one of several factors which added to the British tendency to take a long time to plan and build up for their offensives.

The Canadian Army had many problems in raising the manpower for the training and processing of replacements for its combat units in World War II. An acute manpower shortage being the most limiting. Because of these difficulties, they were able to keep a replacement system functioning , and it was able to keep almost all Canadian divisions at or near full strength in manpower, as long as their losses were not to heavy. For game porpoises Canadian replacements are treated to be the same as British replacements.

In the game, the Commonwealth receive an unlimited number of infantry and armor replacement points, since the D-Day invasion was a planned offensive and the need for replacements was anticipated. For the sake of playability, there is no restriction on which infantry–type units may use infantry replacements and which armor–type units may use armor replacements.

In the Campaign Game, the Commonwealth player begins with 10 airborne replacement points available, with five of the airborne replacement points represent true replacements, and the other five represent the delayed "return" of personnel who were too scattered by the initial drop to fight with their units during the first day of the invasion.

Commonwealth replacement points are added to the unit receiving them one at a time.

To reflect the worsening British and Canadian manpower situation by this stage of the war and the caution which that produced in British military planning, **each British replacement point (of either type) used by the Allied player costs him 10 victory points**.

German Replacements - Gold • Juno • Sword

The German Replacement Army began the war with a much smaller population base of suitable young men to draw from than did the Allies. To make matters worse, by 1944 that smaller pool of available German manpower was almost exhausted. Consequently, most German units in Normandy were not able to replace their losses. During the month of June 1944, total German dead, wounded , and missing in Normandy amounted to some 70,000 men. During that same month only about 8,000 replacements arrived.

Although most German divisions had their own field replacement battalions (included as part of the replacement points in GOLD • JUNO • SWORD), these replacement battalions depended on a supply of recruits from the Replacement Army that was never adequate. The result was that German divisions always got weaker and weaker the longer they remained on the front line. Eventually, German divisions were always reduced to burned–out shells, and the surviving remnants then had to be withdrawn for complete rebuilding, a process that normally took weeks.

The ability of the Germans to replace lost heavy equipment (tanks, etc.) was limited. In fact, front–line German units received a total of 12 new tanks in June, and all of them had already been allocated to the 12th SS. Normally such items usually went only to brand–new divisions still in the process of formation, or to units in the rear area that had suffered heavy losses and were being completely rebuilt. The Germans did maintain a large field repair organization and were able to provide a small amount of replacement tanks to their armored units.

The number of German replacement points available varies from scenario to scenario. In the Campaign Game, the German player has a total of 79 replacement points for infantry and engineer units and 27 armored replacement points.

German replacement points are added to the unit receiving them one at a time (i.e., one strength point per unit receiving replacements per turn). If there are enough replacement points

remaining, more than one unit may receive replacements during the same turn.

Unlike the Allied player, the German player never suffers a victory point penalty for using replacement points.

German Replacements - Market Garden

The German Replacement Army was a large, carefully–organized establishment, responsible for drafting men, training them, building new units, and providing personnel replacements for all existing units in the German Army. During the first part of the war, new German recruits and draftees received their basic training in a Replacement Army unit in Germany, after which those assigned as field replacements were transferred to a "Field Replacement and Training" battalion near the front line. ("Feld Ersatz und Ausbildung" in German; usually abbreviated as either FE or FA, especially in wargames.) Each division in the German Army contained one of these replacement and training battalions, and there were also a number of them attached directly to higher HQ's, such as corps and field armies.

These field replacement battalions served several purposes, including: advanced training for newly arrived replacements before sending them on to actual field units; a convalescent/limited duty unit for the "walking wounded" during their recuperation; rear–area security; and finally, as a last–ditch, emergency reserve.

Beginning with the German invasion of the Soviet Union in 1941, the Replacement Army and the field replacement battalions were generally unable to process enough replacements to maintain front–line German divisions at full strength, especially when the divisions were engaged in heavy or prolonged combat. The three principal reasons for this were: (1) the limited German manpower pool; (2) losses which were much heavier than expected; and (3) Hitler's personal preference for creating additional, entirely new divisions instead of using the same manpower to keep existing units at full strength. The result was that German divisions always got weaker and weaker the longer they remained on the front line. Eventually, German divisions were always reduced to burned–out shells, and the surviving remnants then had to be withdrawn for complete rebuilding with new personnel, a process that normally took several months or more.

By 1944, these huge losses, combined with the critical need for even more men on the front lines, were responsible for great stresses within the German replacement system. Numerous short–cuts and emergency measures were taken in the training programs, including the transfer of whole training divisions from the Replacement Army in Germany to occupied countries and/or areas closer to the front. In the Market–Garden area, such units included the 84th, 85th, 180th, and 406th Training Divisions, all of which were rushed from Germany into Holland on an emergency basis, and then redesignated as infantry divisions after the conclusion of the battle. This policy of sending training units into combat provided a short–term increase in German manpower at the front (albeit a lot of it incompletely trained manpower), at the expense of replacements for the regular combat units.

The number of German replacement points available varies from scenario to scenario. In the Campaign Game, the German player begins the game with a total of 44 infantry replacement points for non–airborne infantry and engineer units, 3 airborne replacement points, and **no** armor replacement points.

Russian Replacements - Velikiye Luki

Compared to the size of the army it supported, the Red Army's rear–area replacement and training establishment was much smaller than those of the other major combatants of WWII. This was because it was the Red Army's policy not to make any attempt to replace rank–and–file personnel losses, in most units at least, while the unit was on the front line. The strength of most Russian units, especially infantry divisions, therefore declined rapidly in action, and eventually the division, severely weakened and depleted, had to be withdrawn for complete rebuilding.

This practice made sense given the nature of the Red Army – a mass levy which relied on sheer numbers of men rather than the personal skills and combat performance of individual soldiers. In such an army, a large replacement and training establishment was not needed, and, given the low level of education and technical skill among the Soviet population as a whole, probably would not have been justified by the results. It was more important to get as many men as possible into action as quickly as possible.

The majority of men entering the Red Army went directly from civilian life into their final combat units, where they received a

bare minimum of individual and unit training, before going into action with that same unit. Both new divisions and depleted, veteran divisions were routinely filled out and brought up to strength by the wholesale incorporation of masses of raw recruits, often obtained locally, who had not yet received any training at all. It was a simple, almost crude method that resulted in very high casualties among the poorly–trained recruits, especially early in the war, but it got large numbers of men into action quickly, and in the end it worked.

The only differences between infantry and other types of units in this regard were that men with more intelligence or education *tended* to be assigned to the more technically–oriented units such as armor and artillery, and such units *usually* had to spend more time training as a unit before going into action.

The Red Army did maintain a few separate replacement and training units, but only for those specialists who required significantly more education, technical skill, and training than the rank–and–file soldiers. Such specialists included officers and commissars, pilots, artillerymen, snipers, and mechanics, all of which had their own special schools and replacement units. Thus, when an officer such as a battalion or regimental commander was killed, a trained replacement was sent specifically to take his place, but that did not happen for individual enlisted men, or even most NCO's.

In the game, the Russian player receives a small number of infantry replacement points. These are *not* intended to represent the mass influx of untrained manpower that was necessary in order to rebuild a significant number of rifle battalions, and are far from sufficient for that purpose. Rather, they represent two things: a small but steady flow of trained personnel for specialist units such as ski brigades and engineer battalions; and also a limited number of lightly–wounded men who are fit to return to duty after only a short time away from their units. There is no restriction on what kinds of infantry–type units may use these replacements, and the Russian player is free to use them to rebuild any infantry–type units (including cavalry) that he wishes. This is not a lapse of historical detail or accuracy; it is in the Russian player's interest to reserve his small number of infantry replacement points for his best and most important units, which is very close to standard Red Army practice.

Like personnel replacements, delivery of new heavy equipment such as tanks was also generally limited to new units still in the process of formation, or to units in the rear that had suffered

heavy losses and were being completely rebuilt. Therefore, in the game, armor replacement points represent temporarily disabled vehicles which have been repaired by field maintenance and workshop units near the front and returned to service, rather than new vehicles fresh from the factories.

The number of Russian replacement points available varies from scenario to scenario. In the Campaign Game, the Russian player receives a total of 27 infantry replacement points for infantry, ski, cavalry, and engineer units, and 18 armor replacement points. A fraction of these "arrive" (i.e., become available) each day, at the rate of 3 infantry replacement points and 2 armor replacement points per week. Unused replacement points **may** be accumulated from day to day and week to week. Note that the Russian player may **not** rebuild HQ units using replacement points. However, eliminated Russian divisional, corps, and army HQ's automatically return to play at the end of the next 4:00 A M Execution Phase, **if** there are any units attached to that HQ which are still in play, **and if** one of these units occupies, or is adjacent to, a hex which is not in a German zone of control, and is permissible terrain for the HQ unit. Russian brigade HQ's are never replaced.

Russian replacement points are added to the unit receiving them one at a time (i.e., one strength point per unit receiving replacements per turn). If there are enough replacement points available, more than one unit may receive replacements during the same turn.

In Velikiye Luki, there is no victory point penalty (for either side) for using replacement points.

German Replacements - Velikiye Luki

The German Replacement Army was a large, carefully–organized establishment, responsible for drafting men, training them, building new units, and providing personnel replacements for all existing units in the German Army. New German recruits and draftees received their basic training in a Replacement Army unit in Germany, after which those assigned as field replacements were transferred to a "Field Replacement and Training" battalion near the front line. ("Feld Ersatz und Ausbildung" in German; usually abbreviated as either FE or FA, especially in wargames.) Each division in the German Army contained one of these replacement and training battalions, and there were also a

number of them attached directly to higher HQ's, such as corps and field armies.

These field replacement battalions served several purposes, including: advanced training for newly arrived replacements before sending them on to actual field units; a convalescent/limited duty unit for the "walking wounded" during their recuperation; rear–area security; and finally, as a last–ditch, emergency reserve.

Beginning with the German invasion of the Soviet Union, the Replacement Army and the field replacement battalions were generally unable to process enough replacements to maintain front–line German divisions at full strength, especially when the divisions were engaged in heavy or prolonged combat. The three principal reasons for this were: (1) the limited German manpower pool; (2) losses which were much heavier than expected; and (3) Hitler's personal preference for creating additional, entirely new divisions instead of using the same manpower to keep existing units at full strength. The result was that, just like in the Red Army, German divisions always got weaker and weaker the longer they remained on the front line, although German divisions of all types had more "staying power" that their Red Army counterparts, and lasted longer before having to be withdrawn. Eventually though, German divisions were always reduced to burned–out shells, and the surviving remnants then had to be withdrawn for complete rebuilding with new personnel, a process that normally took several months or more.

The ability of the Germans to replace lost heavy equipment (tanks, etc.) was even more limited. In fact, front–line German units almost never received any *new* vehicles or guns; such items usually went only to brand–new divisions still in the process of formation, or to units in the rear area that had suffered heavy losses and were being completely rebuilt. Armor replacement points therefore represent temporarily disabled vehicles which have been repaired by field maintenance and workshop units near the front and returned to service, rather than new vehicles fresh from the factories.

In the game, the field replacement battalions of all but one of the German divisions are assumed to be part of the divisional HQ, and are not included as separate units. The sole exception is the field replacement battalion of the 83rd Infantry Division, which *is* represented in the game as a separate unit. The reason for this is that the 83rd's field replacement battalion was historically

committed to front–line combat within the city of Velikiye Luki, due to the extremely critical nature of the fighting there. Since several of the scenarios in the game recreate that situation, we felt it was important to include all the units that did, in fact, fight there.

The number of German replacement points available varies from scenario to scenario. In the Campaign Game, the German player receives a total of 90 infantry replacement points for non–airborne infantry and engineer units, and 18 armor replacement points. A fraction of these "arrive" (i.e., become available) each day, at the rate of 10 infantry replacement points and 2 armor replacement points per week. Unused replacement points **may** be accumulated from day to day and week to week. Note that the German player may **not** rebuild the following kinds of units using replacement points: Brandenburg commandos, airborne infantry, or HQ units. However, eliminated German HQ's automatically return to play at the end of the next 4:00 A M Execution Phase, **if** there are any units attached to that HQ which are still in play, **and if** one of these units occupies, or is adjacent to, a hex which is not in a Russian zone of control, and is permissible terrain for the HQ unit.

German replacement points are added to the unit receiving them one at a time (i.e., one strength point per unit receiving replacements per turn). If there are enough replacement points available, more than one unit may receive replacements during the same turn.

In Velikiye Luki, there is no victory point penalty (for either side) for using replacement points.

American Replacements - Utah Beach

The U.S. Army Ground Forces Command (AGF) was the organization responsible for the training and processing of replacements for the combat units of the U.S. Army. AGF had the deliberate and ambitious goal of providing a flow of trained replacements sufficient to keep all 90 divisions of the U.S. Army in combat and at full strength indefinitely. Despite some minor difficulties, this massive replacement system functioned generally as intended, and beginning in 1943 it was able to keep almost all U.S. Army divisions at or near full strength in manpower, regardless of their losses. No other army in the world had anything like this kind of replacement capability, and it made the U.S. Army far more effective than its relatively small number of divisions would otherwise indicate. Even though the

average American division in Normandy lost 50 percent of its infantrymen *month* (a much higher casualty rate than almost all pre–invasion estimates), AGF's replacement system was still able to keep up, maintaining most units in Normandy at or near full strength in manpower. The only significant exceptions were the two airborne divisions, which required more parachute–qualified replacements than the small number of jump schools could train in a short period of time.

Replacements for lost heavy equipment (such as tanks and artillery pieces) were harder for American units to obtain than personnel replacements, because (1) the actual losses of such items greatly exceeded the pre–invasion estimates (American tank losses in Normandy were almost *four times* greater than expected), and (2) the considerable difficulties and delays involved in packaging, loading, shipping, and delivering such large and heavy items. While all heavy equipment losses suffered by American units were *eventually* replaced, the process took much longer than personnel replacements, and so replacements for heavy equipment are beyond the scope of this game.

Except for airborne infantry and airborne engineers, the American player always has an **unlimited** number of replacement points available. The number of replacement points available for American *airborne* infantry and *airborne* engineer units varies from scenario to scenario. **Each** non–airborne, non–HQ replacement point used by the American player **costs** him **5 victory points**, and **each** HQ replacement point used by the American player **costs** him **50 victory points**.

In the Campaign Game, the American player begins with 40 airborne replacement points available, and a starting victory point score of +80 victory points for regular infantry replacements "not taken". Twenty of the airborne replacement points represent true replacements, and the other twenty represent the delayed "return" of personnel who were too scattered by the initial drop to fight with their units during the first day of the invasion. The +80 victory point score represents replacement manpower that was already assigned, before the invasion, to the 4th Infantry Division, but which was not needed due to the lower–than–expected D–Day casualties at Utah Beach.

American replacement points are normally added to the unit receiving them in groups of two (i.e., two strength points per turn). A unit never receives more than two replacement points in one turn. The following situations could cause it to receive only one:

1. The unit receiving the replacements only needs one replacement point to bring it up to full strength.

2. An airborne unit is receiving replacements and there is only one airborne replacement point still available.

3. An American HQ unit is receiving replacements. HQ units may only receive one replacement point per turn.

German Replacements - Utah Beach

The German Replacement Army began the war with a much smaller population base of suitable young men to draw from than did the U.S. Army Ground Forces Command. To make matters worse, by 1944 that smaller pool of available German manpower was almost exhausted. Consequently, most German units in Normandy were not able to replace their losses. During the month of June 1944, total German dead, wounded , and missing in Normandy amounted to some 70,000 men. During that same month only about 8,000 replacements arrived.

Although most German divisions had their own field replacement battalions (included as part of the divisional HQ unit in Utah Beach), these replacement battalions depended on a supply of recruits from the Replacement Army that was never adequate. The result was that German divisions always got weaker and weaker the longer they remained on the front line. Eventually, German divisions were always reduced to burned–out shells, and the surviving remnants then had to be withdrawn for complete rebuilding, a process that normally took several months or more.

The ability of the Germans to replace lost heavy equipment (tanks, etc.) was even more limited. In fact, front–line German units almost never received any *new* vehicles or guns; such items usually went only to brand–new divisions still in the process of formation, or to units in the rear area that had suffered heavy losses and were being completely rebuilt.

The number of German replacement points available varies from scenario to scenario. In the Campaign Game, the German player has a total of 32 replacement points for non–airborne infantry and engineer units. The German player may **not** rebuild airborne infantry or HQ units.

German replacement points are added to the unit receiving them one at a time (i.e., one strength point per unit receiving

replacements per turn). If there are enough replacement points remaining, more than one unit may receive replacements during the same turn.

Unlike the American player, the German player never suffers a victory point penalty for using replacement points.

Victory Conditions

Victory in V for Victory™ games is assessed numerically through the tabulation of victory points. In each scenario, victory points are awarded to both sides for possession of geographic objectives and inflicting losses on the enemy. The game keeps track of each side's current victory point total, and makes whatever adjustments are required each turn.

During any Planning Phase, players may examine the geographic objectives of the scenario, the current victory point totals for both sides, and the current victory level by clicking on the "V for Victory" button at the bottom of the General Sidebar. This opens the Victory Window at the bottom of the screen.

Geographic Objectives

In each scenario, there are a number of geographic objectives that represent the **majority** of the victory points that each side can earn. Each scenario has a different set of geographic objectives and their corresponding values in victory points. In each scenario (*except* the Velikiye Luki scenario "Into the City"), all the geographic objectives **for that scenario** are labeled on the map. To see what each of these objectives is worth, use the "Next" and "Locate" buttons on the right side of the Victory Window.

Alternately, you can use the Victory Location Buttons. These buttons, when clicked will center the map on areas which offer victory points when captured. If your MAC has a 12" screen or smaller, these buttons will not appear on your display.

At the end of every game–turn, victory points are awarded to one side or the other for possession of each geographic objective. **Additional victory points are also awarded at the end of each scenario for possession of each geographic objective at that time**. For each objective, the victory points awarded for possession at the end of the scenario are equal to the value of that objective to

that side each turn **multiplied** by the number of turns in the scenario. In other words, each objective is worth just as much to hold at the end of the scenario as it is to hold throughout the entire scenario. Thus, there are benefits both for taking and holding each objective as long as possible, and for holding it at the end of the scenario.

Victory Conditions - Gold • Juno • Sword

In the Campaign Game, the geographic objectives correspond to all the named cities on the map. The following lists of all the named cities, in the campaign game, and their victory point values.

City	Victory Points per Turn
Bayeux	20
Tilly-sur-Seulles	16
Villers-Bocage	16
Evrecy	8
Amaye-sur-Orne	8
Caen	8
Franceville	8
Orne Bridge #1	2
Orne Bridge #2	2
Orne Bridge #3	2
Troarn	2
Cormelles	2

Losses Inflicted on Enemy Units

In each scenario, both sides receive 20 victory points for each unmodified defense strength point of enemy armor, mech recon, artillery, or HQ that is lost, and 10 victory points for each unmodified defense strength point of enemy infantry, engineer,

antitank, or anti–aircraft that is lost. Exception: the Allied player only receives 5 victory points for each unmodified defense strength point of German Ost infantry that is lost.

Victory Point Penalties

To reflect the worsening British manpower situation and the caution which that produced in British military planning, **each British replacement point (of either type) used by the Allied player costs him 10 victory points**.

Naval Support: For each fire mission conducted by a ship, the Allied player loses the following number of victory points:

Ship Type	Victory Point Cost
	(per ship per fire mission)
	(before June 18/ June 18 and after)
Battleship	8 / 25
Heavy Cruiser	5 / 15
Monitor	2 / 15
Light Cruiser	1 / 5
Destroyer	0 / 1

Victory Levels

To assess the performance of both sides relative to the actual campaign and to assign some meaning to the result, the game keeps track of the current Victory Level. It does this at the end of each turn by **subtracting the current Axis victory point total from the current Allied total**, with the result being defined as the current score. During any Planning Phase, you can open the Victory Window by clicking on the "V for Victory" button at the bottom of the General Sidebar. You can see the current victory level on the far left side of the Victory Window. The current score can be easily calculated by subtracting the current Axis victory

point total from the current Allied total; the game does this for you and displays the result on the graph in the middle of the window. In each scenario, each blue dot on the graph represents the **cumulative** victory point score at the end of a certain period of time. The number of turns represented by each dot are variable, and depend upon the length of the scenario. The *exact* relationship is that each dot represents the cumulative score after 1/26th of the length of the current scenario (because the graph is only wide enough for 26 dots). For most of the scenarios, this means that each dot represents the cumulative score for some fraction of a turn; in the Campaign Game each dot represents the cumulative victory point score for 2.7 turns.

There are six victory levels. They are listed below, along with their corresponding scores and the historical implications of that victory level if it were to become the final, end–of–game result in the Campaign Game.

Decisive Commonwealth Victory (Score: +8000 or more). The Commonwealth has won an overwhelming victory, crushing the German forces in the Caen sector. If the same thing has happened in the Omaha and Utah sectors, the remaining German forces in Western Europe will not be able to stop the Allied armies. The war in Europe may be over before the end of 1944.

Substantial Commonwealth Victory (Score: +4000 to +7999). So far, the invasion has gone essentially as planned in the GOLD • JUNO • SWORD sector, with the Commonwealth suffering only slight delays. If the situation is similar in the Omaha and Utah sectors, an Allied breakout from Normandy will probably occur towards the end of the summer, Paris should be liberated soon afterwards, and most of France should be liberated before the end of the year.

Marginal Commonwealth Victory (Score: +1 to +3999). The German defenses in the GOLD • JUNO • SWORD sector have been tougher than anticipated by the Allies. The Commonwealth has achieved most (but not all) of its objectives, and is somewhat behind schedule. If the situation is similar in the Omaha and Utah sectors, a clean Allied breakout from Normandy remains possible. If that can be achieved, it should also be possible to liberate Paris before the end of the year.

Marginal German Victory (Score: 0 to –3999). (Note: this is the historical result of the Campaign Game.) For the most part, the German defense of the GOLD • JUNO • SWORD sector has been solid and competent. The Commonwealth is definitely behind

schedule in achieving its objectives. Unless the situation is significantly better for the Allies in the Omaha and Utah sectors, a clean Allied breakout from Normandy is unlikely. The liberation of most of Normandy and Brittany before the end of the summer is still possible, but it will be slow going, and it is uncertain whether or not Paris can be liberated in 1944.

Substantial German Victory (Score: –4000 to –7999). Despite some minor setbacks, the German defense of the GOLD • JUNO • SWORD sector has been largely successful, and the Commonwealth has failed to achieve most of its objectives. Unless the situation is very different in the Omaha and Utah sectors, it is unlikely that the Allies will realize their goals for the campaign. Normandy will probably be the only part of France to be liberated in 1944, and the war may last beyond the end of 1945.

Decisive German Victory (Score: –8000 or less). The German defense of the GOLD • JUNO • SWORD sector has been masterful; the Commonwealth has failed to achieve any of its major objectives. If the situation is the same in the Omaha and Utah sectors, the entire Allied invasion of Normandy has failed. Another major Allied invasion will have to be made somewhere else in Europe, but that cannot occur before May 1945, due to planning, buildup, and weather constraints. The war will not be over until 1946 at the earliest.

Victory Conditions - Market Garden

In each Market-Garden scenario, each objective is worth the same number of victory points to each side. Below is a list of the geographic objectives in the Campaign Game, and their victory point values in that scenario.

Campaign Game Geographic Objectives

City/Village	Victory Points per Turn	Victory Points at End
Arnhem Bridge	24	1680
Nijmegen	20	1400
Grave Bridge	5	350
Zon Bridge	4	280
Best Bridge	4	280
Eindhoven	4	280
Groesbeeck	4	280
Oosterbeck	4	280

Driel	4	280
Fort Lent	4	280
Doumont	4	280
Helmond	4	280
Veghel	4	280
Velp	4	280
Kiete	4	280
Ehrke	4	280
Ede	4	280
Larie	4	280

Losses Inflicted on Enemy Units

In each scenario, both sides receive 20 victory points for each unmodified defense strength point of enemy armor, mech recon, artillery, or HQ that is lost, and 10 victory points for each unmodified defense strength point of enemy infantry, engineer, antitank, or anti–aircraft that is lost. Exception: the Allied player only receives 5 victory points for each unmodified defense strength point of German Ost infantry that is lost.

Victory Point Penalties

To reflect the worsening British manpower situation and the caution which that produced in British military planning, **each British replacement point (of either type) used by the Allied player costs him 10 victory points**.

Victory Levels

To assess the performance of both sides relative to the actual campaign and to assign some meaning to the result, the game keeps track of the current Victory Level. It does this at the end of each turn by **subtracting the current German victory point total from the current Allied total**, with the result being defined as the current score. During any Planning Phase, you can open the Victory Window by clicking on the "V for Victory" button at the bottom of the General Sidebar. You can see the current victory level on the far left side of the Victory Window. The current score can be easily calculated by subtracting the current German victory point total from the current Allied total; the game does this for you and displays the result on the graph in the middle of the window. In each scenario, each blue dot on the graph represents the **cumulative** victory point score at the end of a certain period of time. The number of turns represented by each dot are variable, and depend upon the length of the scenario. The

exact relationship is that each dot represents the cumulative score after 1/26th of the length of the current scenario (because the graph is only wide enough for 26 dots). For most of the scenarios, this means that each dot represents the cumulative score for some fraction of a turn; in the Campaign Game each dot represents the cumulative victory point score for 2.7 turns.

There are six victory levels. They are listed below, along with their corresponding scores and the historical implications of that victory level if it were to become the final, end–of–game result in the Campaign Game.

Decisive Allied Victory (Score: +8000 or more). The 21st Army Group has won an overwhelming victory, crushing the German forces in southern Holland, quickly seizing a bridgehead over the Rhine and cutting a corridor into the German Reich. The Germans probably will not be able to stop an Allied advance into the Ruhr industrial complex, and the V-2 launch sites threatening England will be isolated. The war may be over before Christmas.

Substantial Allied Victory (Score: +4000 to +7999). The 21st Army Group has performed well, taking Arnhem, inflicting significant losses on the Germans, and threatening the supply line for much of the German 15th Army in Holland. The stage is now set for further Allied advances which could isolate the 15th Army, as well as possible offensives into Germany itself, aimed at capturing the key Ruhr industrial complex before the end of the year.

Marginal Allied Victory (Score: +1 to +3999). The 21st Army Group has achieved most of its goals for the offensive, although not without some difficulties. Mounting German resistance will probably prevent any quick or major victories in this sector before the end of the year, but it might be possible to reach the coast in northern Holland, threatening the flanks of the German 15th Army.

Marginal German Victory (Score: 0 to –3999). The German defense of this area has been fairly successful, but a further Allied advance could open a gap between the German 2nd Parachute and 15th Armies, threatening the flanks of both. Additional British attacks can be expected in the near future, and it is uncertain whether or not they can be contained.

Substantial German Victory (Score: –4000 to –7999). (Note: This is the historical result of the Campaign Game.) This British offensive, at least, has failed. The Germans have successfully

"bought time" by holding Arnhem, thereby preventing any British drives beyond the Rhine. Although renewed British offensives in this area can be expected before the end of the year, it should be possible to contain them without yielding too much ground or suffering major German losses.

Decisive German Victory (Score: –8000 or less). The German defense of the Arnhem area has been masterful, and the British 21st Army Group has suffered significant losses without achieving any of its major objectives. Arnhem will remain in German hands for the foreseeable future, and the Allies will not cross the Rhine River in 1944. Furthermore, if the German forces now assembled near Arnhem are not urgently needed elsewhere, a German offensive can probably be launched from this area to complement the planned Ardennes offensive later in the year.

Victory Conditions - Velikiye Luki

In some Velikiye Luki scenarios, objectives may be worth more victory points to one side than to the other side. Also, in all scenarios **except** "Into the City," the city of Velikiye Luki and the large village of Novosokolniki are multi–hex objectives. This means that, in the case of **Velikiye Luki**, the Russian player must own **every hex** of the city in order to gain **any** victory points for it; the German player gains **all** the points for it even if he only holds **one** hex of it. This situation is reversed for Novosokolniki, where the German player must own **every hex** of the village in order to gain any victory points for it; the Russian player gains **all** the points for it even if he only holds **one** hex of it. (In "Into the City" only, Velikiye Luki is not a multi–hex objective, and individual hexes within the city constitute separate geographic objectives.)

Below is a list of the geographic objectives in the Campaign Game, and their victory point values in that scenario. Each objective in the Campaign Game is worth the same number of victory points to each side.

Campaign Game Geographic Objectives

City/Village	Victory Points per Turn	Victory Points at End
Velikiye Luki	6	2400
Novosokolniki	5	2000

Vaskovo	1	400
Voyevo	1	400
Nasva	1	400
Kiselevichi	1	400
Shubino	1	400
Vlasye	1	400
Izocha	1	400

Note that Vaskovo and the other villages listed below it are all located on the railroad that runs from north to south, near the west edge of the map. This railroad is the main Vitebsk–Leningrad line, important for the supply of the southern portion of the German Army Group North. Possession of these villages (actually small railroad stations) represents long–term control over that portion of the line.

Losses Inflicted on Enemy Units

In each scenario, the Russians receive 20 victory points for each unmodified defense strength point of German armor, mech recon, artillery, or HQ that is lost, and 10 victory points for each unmodified defense strength point of German infantry, ski, security, engineer, antitank, or anti–aircraft that is lost.

In each scenario, the Germans receive 2 victory points for each unmodified defense strength point of Russian armor, mech recon, artillery, or HQ that is lost, and 1 victory point for each unmodified defense strength point of Russian infantry, ski, cavalry, engineer, antitank, or anti–aircraft that is lost.

Victory Point Penalties

Unlike some of the other games in the V for Victory™ series, in Velikiye Luki there are no victory point penalties for either side.

Victory Levels

To assess the performance of both sides relative to the actual campaign and to assign some meaning to the result, the game keeps track of the current Victory Level. It does this at the end of each turn by **subtracting the current German victory point total from the current Russian total**, with the result being defined as the current score. During any Planning Phase, you can open the Victory Window by clicking on the "V for Victory" button at the bottom of the General Sidebar. You can see the current victory level on the far left side of the Victory Window. The current score

can be easily calculated by subtracting the current German victory point total from the current Russian total; the game does this for you and displays the result on the graph in the middle of the window. In each scenario, each blue dot on the graph represents the **cumulative** victory point score at the end of a certain period of time. The number of turns represented by each dot are variable, and depend upon the length of the scenario. The *exact* relationship is that each dot represents the cumulative score after 1/26th of the length of the current scenario (because the graph is only wide enough for 26 dots). For most of the scenarios, this means that each dot represents the cumulative score for two or three turns; in the Campaign Game, because of its great length, each dot represents the cumulative victory point score for 15 turns (2.5 days).

There are six victory levels. They are listed below, along with their corresponding scores and the historical implications of that victory level if it were to become the final, end–of–game result in the Campaign Game.

Decisive Russian Victory (Score: +8000 or more). The 3rd Shock Army has won an overwhelming victory, crushing the German forces in the Velikiye Luki area, quickly seizing the city, and cutting the supply line for much of the German Army Group North. Due to the simultaneous Russian victory at Stalingrad, German reserves have been stretched to the breaking point, and the Germans probably will not be able to stop a Russian advance beyond Velikiye Luki to Pskov and Riga in early 1943. This will trap the entirety of Army Group North, lift the siege of Leningrad, and permit an advance into Poland before the end of 1943.

Substantial Russian Victory (Score: +4000 to +7999). The 3rd Shock Army has performed well, taking Velikiye Luki, inflicting significant losses on the Germans, and threatening the supply line for much of the German Army Group North. The stage is now set for further advances in 1943 which could isolate Army Group North, as well as possible offensives beyond Velikiye Luki to the south, aimed at liberating Vitebsk and Smolensk before the end of the year.

Marginal Russian Victory (Score: +1 to +3999). The 3rd Shock Army has achieved most of its goals for the offensive, although not without some difficulties. Stiff German resistance will probably prevent any quick or major victories in this sector in 1943, but it might be possible to reach Pskov and/or Vitebsk, threatening the flanks of the German Army Groups North and Center, respectively.

Marginal German Victory (Score: 0 to –3999). The German defense of this area has only been partially successful, and a further Russian advance could open a gap between Army Groups North and Center, threatening the flanks of both. Additional Russian attacks can be expected in the near future, and it is uncertain whether or not they can be contained.

Substantial German Victory (Score: –4000 to –7999). (Note: this is the historical result of the Campaign Game.) The Germans have successfully "bought time" by holding Velikiye Luki against strong Russian pressure for almost two months, thereby protecting the vital Vitebsk–Leningrad railroad, and preventing any strong Russian drives beyond Velikiye Luki. Although renewed Russian offensives in this area can be expected in 1943, it should be possible to contain them without yielding too much ground or suffering major German losses.

Decisive German Victory (Score: –8000 or less). The German defense of Velikiye Luki has been masterful, and the Russian 3rd Shock Army has suffered significant losses without achieving any of its major objectives. Velikiye Luki will remain in German hands throughout 1943, a firm anchor at the boundary between Army Groups North and Center. Furthermore, if the German forces now assembled near Velikiye Luki are not urgently needed elsewhere, a German offensive can probably be launched from Velikiye Luki to the east, with the objective of taking Toropets, and eliminating the threat to the German–occupied salient at Rzhev.

Victory Conditions - Utah Beach

In the Campaign Game, the geographic objectives correspond to all the named cities on the map. The next page contains a list of all the named cities, and their victory point values in these two scenarios.

Campaign Game Geographic Objectives

City	Victory Points per Turn Campaign Game (Same for both sides)
Cherbourg	16

Carentan	8
Isigny	3
St. Mere Eglise	3
Periers	2
Lessay	2
La Haye du Puits	2
Carteret	1
St. Saveur le Vicompte	1
Montebourg	1
Valognes	1
Briquebec	1
St. Vaast la Hougue	1
Quettehou	1

Losses Inflicted on Enemy Units

In each scenario, each side receives 20 victory points for each unmodified defense strength point of enemy armor, mech recon, artillery, or HQ that is lost. Exception: the American player only receives 10 victory points for each unmodified defense strength point of German light panzer that is lost – i.e., the 100th and 206th Light Panzer Battalions.

In each scenario, each side receives 10 victory points for each unmodified defense strength point of enemy infantry, engineer, antitank, or anti–aircraft that is lost. Exception: the American player only receives 5 victory points for each unmodified defense strength point of German Ost infantry that is lost.

The victory points awarded for inflicting losses on an enemy unit are **tripled** if the enemy unit surrenders, is in a state of no supply when its losses are taken, or if its losses are due to not having a retreat path or retreating through an enemy zone of control.

Victory Point Penalties

American Replacements: Each replacement point used by the American player to rebuild an HQ unit costs him 50 victory points. Each **non–airborne** replacement point used by the American player to rebuild a non–airborne infantry or engineer unit costs him 5 victory points.

Naval Support: For each fire mission conducted by a ship, the American player loses the following number of victory points:

Ship Type   Victory Point Cost

	(per ship per fire mission) (before June 18/ June 18 and after)
Battleship	8 / 25
Heavy Cruiser	5 / 15
Monitor	2 / – (not in play)
Light Cruiser	1 / 5
Destroyer	0 / 1

Victory Levels

To assess the performance of both sides relative to the actual campaign and to assign some meaning to the result, the game keeps track of the current Victory Level. It does this at the end of each turn by **subtracting the current German victory point total from the current American total**, with the result being defined as the current score. During any Planning Phase, you can open the Victory Window by clicking on the "V for Victory" button at the bottom of the General Sidebar. You can see the current victory level on the far left side of the Victory Window. The current score can be easily calculated by subtracting the current German victory point total from the current American total; the game does this for you and displays the result on the graph in the middle of the window. In each scenario except the Campaign Game, each blue dot on the graph represents the **cumulative** victory point score at the end of **each turn**. In the Campaign Game, each blue dot on the graph represents the **cumulative** victory point score at the end of **each day**, and the orange dots show the corresponding **historical** victory point scores from the actual campaign.

There are six victory levels. They are listed below, along with their corresponding scores and the historical implications of that victory level if it were to become the final, end–of–game result in the Campaign Game.

Decisive American Victory (Score: +8000 or more). The American VII Corps has won an overwhelming victory, crushing the German forces in the Utah sector. If the same thing has happened in the Omaha and British sectors, the remaining German forces in Western Europe will not be able to stop the Allied armies. The war in Europe may be over before the end of 1944.

Substantial American Victory (Score: +4000 to +7999). (Note: this is the historical result of the Campaign Game.) So far, the invasion has gone essentially as planned in the Utah sector, with

the American VII Corps suffering only slight delays. If the situation is similar in the Omaha and British sectors, an Allied breakout from Normandy will probably occur towards the end of the summer, Paris should be liberated soon afterwards, and most of France should be liberated before the end of the year.

Marginal American Victory (Score: +1 to +3999). The German defenses in the Utah sector have been tougher than anticipated by the Allies. The American VII Corps has achieved most (but not all) of its objectives, and is somewhat behind schedule. If the situation is similar in the Omaha and British sectors, a clean Allied breakout from Normandy remains possible. If that can be achieved, it should also be possible to liberate Paris before the end of the year.

Marginal German Victory (Score: 0 to –3999). For the most part, the German defense of the Utah sector has been solid and competent. The American VII Corps is definitely behind schedule in achieving its objectives. Unless the situation is significantly better for the Allies in the Omaha and British sectors, a clean Allied breakout from Normandy is unlikely. The liberation of most of Normandy and Brittany before the end of the summer is still possible, but it will be slow going, and it is uncertain whether or not Paris can be liberated in 1944.

Substantial German Victory (Score: –4000 to –7999). Despite some minor setbacks, the German defense of the Utah sector has been largely successful, and the American VII Corps has failed to achieve most of its objectives. Unless the situation is very different in the Omaha and British sectors, it is unlikely that the Allies will realize their goals for the campaign. Normandy will probably be the only part of France to be liberated in 1944, and the war may last beyond the end of 1945.

Decisive German Victory (Score: –8000 or less). The German defense of the Utah sector has been masterful; the American VII Corps has failed to achieve any of its major objectives. If the situation is the same in the Omaha and British sectors, the entire Allied invasion of Normandy has failed. Another major Allied invasion will have to be made somewhere else in Europe, but that cannot occur before May 1945, due to planning, buildup, and weather constraints. The war will not be over until 1946 at the earliest.

Historical Options and Variants

At the beginning of each game, players may select one or more of the following Historical Options and Variants. Each of them constitutes a plausible alternate history, and each of them changes the game situation into something that did *not* actually happen in reality, but *could* have. More than one of them may be in effect at the same time, although not all of them are relevant in every scenario. Only the ones that make sense with the chosen scenario are selectable. Historical Options and Variants may be selected only at the **beginning** of each game, and may not be changed after leaving the Scenario Selection Screen.

Within the Scenario Selection Screen, the Historical Options and Variants are organized into the categories of "Allied Variants," "Axis Variants," "Weather," and "Air Superiority." Within this section of the manual, they are organized into two different categories, based on their effect on the play balance of the game.

Note: some of these variants exert a **strong** influence on the play balance of the game. For that reason, players should feel free to use them to adjust the play balance, if the opponents are not of equal skill or experience. In the list that follows, the relative effect of each variant on play balance is stated immediately after its name.

Random Variants

At the bottom of both the Allied and Axis Variant Menus within the Scenario Selection Screen is an option labeled "Random Variant." If this option is selected, the game will randomly select and implement one of the other variants from that same list, without automatically revealing to the players which variant was selected. There is also a ten percent chance that **two** of the other variants from that same list will be randomly selected and implemented.

The primary purpose of this feature is to enhance uncertainty, limited intelligence, and realism. In order to make the best use of this feature, you should select the Random Variant for the **opposing** side, rather than your own. That way, you will not always know which units your opponent has, how strong his airpower is, etc. If you select the Random Variant for **both** sides in a two–player game, along with all the other Realism Options, you can expect a lot of uncertainty and surprise!

Historical Options and Variants -

Gold • Juno • Sword

Options and Variants That Favor the Commonwealth Player

1. Delayed Arrival of the German 21st Panzer Division(Greatest Effect on Play Balance)

Prior to May 1944, German units in the GOLD • JUNO • SWORD area were limited to the 716th Infantry Division, and approximately 5 batteries of coastal artillery. This was clearly an inadequate force, given the strategic importance of Cherbourg and the long coastlines of the Cotentin Peninsula. However, numerous other sectors along the French coast were just as weak, and so in May the Germans began moving units from the French interior to the coast, and also reinforced them with additional divisions and smaller units transferred from Germany. This was done mostly at Rommel's insistence, although Hitler readily agreed with *some* of what Rommel wanted. The 21st Panzer Division was sent from the interior of France to the Caen area, where they arrived in mid–May. This new unit added significantly to the German strength in the GOLD • JUNO • SWORD area. If the arrival of this German unit had been delayed past June 6th, the Allies would have found their objectives much easier to achieve.

This variant assumes that the 21st Panzer Division, was still in transit to Normandy on D–Day. The units selected do not begin the Campaign Game on the map, but arrive as reinforcements. Exactly when they arrive depends on the weather and Allied air interdiction.

2. More Clear Weather (Major Effect on Play Balance)

The actual weather conditions over Western Europe during the summer of 1944 were abnormally bad. In fact, it was the worst summer weather England and France had experienced in many decades. It was

cloudy, cold, windy, and wet, with severe storms – more like winter than summer. The bad flying conditions and rough seas hindered the Allies greatly.

If the "More Clear Weather" option is selected, the weather in the game corresponds to an average summer for Western Europe, which consists of more clear weather, less cloudiness, and no storms. Better weather therefore improves the availability and effectiveness of Commonwealth airpower, as well as eliminates the numerous difficulties for the Allied side caused by the storms.

Under this option, each weather condition occurs the same percentage of the time as it does during an *average* summer in Western Europe. These percentages are as follows; the data is based on the actual weather experienced during the Battle of Britain, summer 1940.
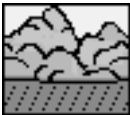
Clear	Light Overcast	Moderate Overcast	Heavy Overcast	Storm
21%	16%	35%	28%	0%

3. More Allied Combat Experience (Moderate Effect on Play Balance)

The British 3rd Division, Canadian 3rd Division and the British 11th Armoured Division all were "green" formations. This option presumes that the Allied High Command chose more experienced units or that the units mentioned above had more experience than they did historically.

Options and Variants That Favor the German Player

4. Limited Allied Air Superiority(Moderate Effect on Play Balance)

This option assumes that the Allies still had air superiority over Western Europe in 1944, but that it was less than total, and that the Luftwaffe was at least capable of making its presence felt on the battlefield. This could easily have happened if the German High Command had made a few different decisions regarding aircraft production and the air war between 1942 and 1944, and/or if the Germans had converted their economy to a total war footing in 1942 instead of 1943.

If this option is selected, fewer Allied aircraft are available for ground support, Allied air interdiction has less effect on German strategic movement and the arrival of German supply and reinforcements, German air attacks and air interdiction have some effect on the arrival of Allied supply and reinforcements, and the German player may request and receive some ground support.

Although the *historical* Air Superiority Option was "Total Allied", it is interesting to note that the Allied commanders all *assumed* that the Luftwaffe was still a force to be reckoned with, and made their plans accordingly. Once the invasion was launched, the lack of any significant German aerial opposition actually came as a pleasant surprise to the Allied troops and their commanders. Therefore, in the air at least, this option also represents what the Allies *expected* to encounter.

5. Air Parity (Major Effect on Play Balance)

This option assumes that *neither* side had air superiority over Western Europe in 1944, and that Allied and German air strengths were roughly equal. This could have happened if, following its defeat in the Battle of Britain in 1940, Germany had taken the lesson to heart and had subsequently placed much greater emphasis on maintaining and improving its own airpower. Although it is unlikely that the Allies would have launched a major invasion without first achieving at least some

degree of air superiority, there are at least two events that could have led to that result: a major strategic miscalculation, and/or political necessity, such as the imminent collapse of the Soviet Union unless something were done immediately to draw off as much German strength as possible.

If this option is selected, both sides receive approximately equal levels of ground support and air interdiction. In addition, the effects of Allied air interdiction on German strategic movement, supply, and reinforcements are greatly reduced; German air interdiction has a negative effect on Allied strategic movement, supply, and reinforcements; and both sides have an air supply capability for isolated HQ's.

6. Limited German Air Superiority(Greatest Effect on Play Balance)

This is the *least* likely of all the Historical Options and Variants. It is difficult to imagine a situation where the Allies would actually have launched a major invasion in the face of superior German airpower, even if the Soviet Union were on the verge of collapse and this was seen as absolutely the last opportunity to keep Russia in the war and to regain a foothold on the Continent. However, given good secrecy and security, and if the attention of the German High Command was focused elsewhere, a surprise invasion might have been carried out.

If this option is selected, the German player receives more ground support and air interdiction than the Allied player. In addition, the German player has an air supply capability for isolated HQ units, and the Allied player does not.

There is no "Total German" Air Superiority option, because a major Allied invasion under such extremely unfavorable circumstances could not have succeeded, and would never have been seriously contemplated.

7. Extra German Units (Arrival of the II/915th Infantry Battalion at the start of play) (Minor Effect on Play Balance)

On June 6, the two battalions of the 915th Regiment moved laterally across the Omaha Beach area where the II/915th immediately had to be placed into the line to help defend

against the Americans. The rest of the regimental combat team moved to the Bayeux area .

This variant assumes the front–line situation in the neighboring Omaha sector is better for the Germans than it was historically, and the 1/915th Infantry battalion was not needed in that area.

8. 21st Panzer Division More Active on June 6(Major Effect on Play Balance)

On June 6, the commander of the 21st Panzer Division gave many confusing and contradictory orders and completely failed in their prime objective of destroying any Allied parachute landings.

This variant assumes the 21st Panzer was handled better on D-Day and pushed the isolated British 6th Airborne Division back across the Orne River.

9. German Reserve Panzer Divisions Deployed Closer to the Beaches (Major Effect on Play Balance)

Well before June 6, General Rommel wanted to move the 2nd Panzer, 12th SS Panzer, and 130th "Lehr" Panzer closer to the likely invasion sights to reduce the effect of Allied air interdiction and shorten their response time to an Allied invasion.

This variant assumes the panzer reserves in were moved closer to the beaches and they start the game deployed or arrive much faster than historically.

Historical Options and Variants - Market Garden

Options and Variants That Favor the Allied Player

Less Cloudy Weather (Greatest Effect on Play Balance):

The time period covered by this game is September 17 to September 28, 1944. The actual weather conditions recorded near Arnhem during much of that time were overcast and foggy.

If the "Less Cloudy" option is selected on the Weather menu, the weather in the game will favor the side which has air superiority **and** is on the offensive early in the game (usually the Allies). This is because the better sky conditions improve the availability and effectiveness of airpower. It will also allow the Allied player better supply for his airborne units, and earlier airborne reinforcements.

Optional Drop Zones for Allied Airborne Divisions (Major Effect on Play Balance):

If this option is selected, two of the drop zones for the Allied airborne units are moved from their historical locations to areas which, in hindsight, would have been better and more advantageous. This allows two important objectives (the Groesbeek Heights and the bridge at Arnhem) to be taken much more quickly.

No restrictions on British VIII and XII Corps (Major Effect on Play Balance):

Historically, the British VIII and XII Corps were assigned the missions of covering XXX Corp's right and left flanks (respectively) as XXX Corps advanced toward Arnhem. This meant that the units of XII and VIII Corps were not free to advance to Arnhem on their own. Furthermore, the units of VIII and XII Corps were typically (for the British) non–aggressive in the conduct of their mission, and thus failed to take advantage of

German weaknesses in their sectors. The result was that they contributed less to the battle than they could have, if their leadership had been more aggressive.

If this option is selected, the units of the British VIII and XII Corps are free to move and attack without restrictions. This includes the 7th and 11th Armored Divisions, and the 3rd and 15th Infantry Divisions. This allows the Allied player a great deal more strength and flexibility in the conduct of his offensive.

German 9th SS Panzer Division Not in Play (Major Effect on Play Balance):

Historically, the 9th SS Panzer Division was scheduled to leave for Germany on September 18 (the day after the Campaign Game begins) for rebuilding. Several units of the division had already left the map area, and were preparing to board trains for Germany when the Allied offensive began. These units were able to return to the Arnhem area within a few hours after the Allied air drops. If the entire division had left just a few days earlier, it would not have been available to participate in this battle.

If this variant is selected, the units of the 9th SS Panzer Division will not appear in the game, greatly reducing German strength in the Arnhem area.

Entire German 9th SS Panzer Division Delayed (Moderate Effect on Play Balance):

This variant assumes that the entire 9th SS Panzer Division had already left the map area (see Variant Number 4 above), but was still close enough to be able to return as a reinforcement.
Optional Drop Zones for Allied Airborne Reinforcements (Moderate Effect on Play Balance):

If this option is selected, the drop zones for the Allied airborne reinforcements of the British 1st Airborne Division, the American 82nd Airborne Division, and the Polish 1st Parachute Brigade are moved from their historical locations to areas which, in hindsight, would have been better and more advantageous. This allows two important objectives (the Groesbeek Heights and the bridge at Arnhem) to be reinforced much more quickly.

Options and Variants That Favor the German Player

Air Parity (Major Effect on Play Balance):

This option assumes that *neither* side had air superiority over Holland during the autumn of 1944, and that British and German air strengths in the area were roughly equal. This could easily have happened if the Luftwaffe and the German High Command had made a few different decisions regarding aircraft production and the air war.

If this option is selected, both sides receive approximately equal levels of ground support and air interdiction. In addition, both sides have an equal air supply capability for isolated HQ's.

Limited Axis Air Superiority (Greatest Effect on Play Balance):

This option assumes that the Luftwaffe was either a far larger and stronger force than was actually the case during the autumn of 1944, or that (for whatever reason) most of the remaining Luftwaffe was committed to the Arnhem area during the time period covered by the game.

If this option is selected, the German player receives more ground support and air interdiction than the Allied player. In addition, both sides have an air supply capability for isolated HQ's, but the Allied air supply capability is limited to minimal supply.

Note that the Air Superiority options for "Total Allied" and "Total Axis" Air Superiority are not selectable. In the case of "Total Allied" Air Superiority, this is because the Allied plan for this battle *deliberately* avoided maximum use of available airpower, due to the unacceptable risk of mistaken air attack which it posed to the airborne divisions and XXX Corps' armored spearheads. In the case of "Total Axis" Air Superiority, this is because such a situation in the air war would have been historically incompatible with the ground battle as depicted on the map, and would have led instead to a fundamentally different ground situation, which is beyond the scope of the game.

Entire 9th SS Panzer Division begins in play (Major Effect on Play Balance):

Between September 1 and September 17, the 9th SS Panzer Division handed over most of its heavy equipment to the

neighboring 10th SS, in preparation for returning to Germany for a complete refit. Several units of the 9th SS had already left the map area, and were preparing to board trains for Germany when the Allied offensive began. These units were able to return to the Arnhem area within a few hours after the Allied air drop. Had their departure from the area covered by the game map been slightly delayed, German strength in the Arnhem area would have been much greater in the first critical hours after the Allied air drop.

This option assumes that the entire 9th SS Panzer Division was still in the Arnhem area when the Allied offensive begins.

More Cloudy Weather (Major Effect on Play Balance):

Although the historical weather conditions during this battle were not particularly good, they could have been worse, and that would have hindered the Allies even more. If the "More Cloudy" option is selected on the Weather menu, the weather in the game will favor the side which does **not** have air superiority **and** is on the defensive early in the game (usually the Germans). This is because the worse sky conditions reduce the availability and effectiveness of airpower. It also reduces the available supply for Allied airborne units, and delays Allied airborne reinforcements.

More German Infantry Replacements (Moderate Effect on Play Balance):

On September 10, 1944, the spearheads of the American Third and Seventh Armies linked up near the city of Dijon in east–central France. Third Army was moving east from Normandy and was already well past Paris, and Seventh Army was moving north up the Rhone valley, after landing in southern France. The link–up trapped some 130,000 German troops who were still located in southwestern France. Approximately 100,000 of these men were miscellaneous security and rear–area troops dispersed into small garrisons located throughout the region. The other 30,000 contained a higher proportion of combat troops, holding out at the strongly fortified Atlantic ports of Lorient, St. Nazaire, Royan, and La Rochelle. Although the German High Command had seen the encirclement coming, and soon after August 15 had ordered all men not located at the ports to evacuate toward Germany, the majority of them were unable to escape due to insufficient warning, a lack of transportation, and harassment from local partisans. Moving mostly on foot in small groups and out of contact with each other, virtually all of the 100,000 men comprising the rear area troops and general countryside

garrisons were quickly rounded up by the Allies. The firmly entrenched garrisons at Lorient, St. Nazaire, Royan, and La Rochelle, on the other hand, were able to hold out until the end of the war. Unfortunately for the German war effort, the Allies did not need these ports, made no attempts to take them by force, and were quite content to let the German garrisons there quietly sit out the rest of the war.

In retrospect, it would not have been that hard for most of these men to escape to Germany. All that would have been required was for the evacuation order to come two or three weeks earlier, just before the American breakout from Normandy in late July. Even before the breakout, many German generals saw the handwriting on the wall very clearly. Under the circumstances, a pullout from the most distant, least valuable, and most indefensible reaches of France made excellent military sense, so much so that the order to evacuate was actually given, although too late to really accomplish anything. With just a little foresight, that same order could have been given three weeks earlier, in time to get nearly everyone out. Furthermore, if Hitler had placed a higher value on defending Germany than on holding four isolated French ports over 600 miles behind the lines, the 30,000 men located there could also have joined the withdrawal. If these steps had been taken, the additional manpower would have formed a welcome addition to the harried German forces gathering along their own border in September 1944.

This variant assumes that a timely evacuation from southwestern France and the Atlantic ports added these 130,000 men to the German replacement pool in August and September 1944. This would have been enough manpower to bring over 20 badly depleted divisions back to full strength, and some of these men would undoubtedly have gone to the German divisions in Holland. Therefore, if this variant is selected, the German player receives 40 additional infantry replacement points at the beginning of the Campaign Game. Proportionately fewer are received in shorter scenarios.

At the beginning of each scenario in which this variant has been selected, the game automatically uses a number of these extra replacement points to increase the initial strength of German infantry units, both those that begin on the map and those that arrive as reinforcements. The remainder of the extra replacement points are added to those that were historically available.

Historical Options and Variants - Velikiye Luki

Options and Variants That Favor the Russian Player

Less Cloudy and Colder Weather (Greatest Effect on Play Balance):

The time period covered by this game is November 15, 1942 to January 19, 1943. The actual weather conditions recorded near Velikiye Luki during that time were close to average, and were *much* better than the preceding winter of 1941–42, which had been the coldest Russian winter in over 150 years. Due to the milder, more average conditions during the winter of 1942–43, the winter weather was not a significant hindrance to military operations like it had been the previous year.

A surprising point about combat during Russian winters is that, for the wetter and more swampy areas which cover much of the northern half of European Russia, including the area around Velikiye Luki, average winter conditions are actually *better* for most military operations than the warmer temperatures which prevail during the rest of the year. This is because the numerous swamps and water obstacles freeze over during even average winters, and therefore cease to be a hindrance to movement and combat. The *best* winter conditions in Russia are therefore those which are cold but also clear, with a minimum of snowfall, since snow also hinders movement and combat after a certain amount of it accumulates.

If both the "Less Cloudy" and "Colder" options are selected on the Weather menu, the weather in the game will favor the side which has air superiority **and** is on the offensive early in the game (usually the Russians). This is because the mobility–enhancing hard freeze ground conditions begin earlier and last longer, and the better sky conditions improve the availability and effectiveness of airpower.

Russian 24th Cavalry Division in Play (Major Effect on Play Balance):

The Russian 24th Cavalry Division was held in reserve just east of the map area for the duration of the battle of Velikiye Luki, and did not enter the map area during the time period covered by the game. The 24th Cavalry was a typical Red Army cavalry division,

deficient in artillery and weak in total firepower compared to most Red Army rifle divisions, but more mobile than either a rifle division or a motorized unit, especially in difficult terrain. The 24th Cavalry would therefore have been a very useful addition to 3rd Shock Army, particularly during the early stages of the battle, when the Russians held the initiative and were threatening the German flanks and rear. Long–range, mobile operations into the enemy rear was the exact role that Red Army cavalry divisions were designed for and excelled at, and the appearance of the 24th early in the battle would have caused the Germans many headaches.

If this variant is selected, the 24th Cavalry Division either starts on the map, or appears as a reinforcement early in the game (depending on the scenario).

Russian 47th Rifle Division in Play (Moderate Effect on Play Balance)

Russian 334th Rifle Division in Play (Moderate Effect on Play Balance)

Russian 54th Rifle Brigade in Play (Minor Effect on Play Balance)

Like the 24th Cavalry Division, all three of these units were held in reserve just east of the map area for the duration of the battle, and did not enter the map area during the time period covered by the game. These were average Red Army units, and by themselves would not have tipped the balance at Velikiye Luki decisively in favor of the Russians. However, any or all of them could easily have been assigned to 3rd Shock Army, and would have strengthened the Russian offensive against Velikiye Luki and the Vitebsk–Leningrad railroad beyond it.

If one or more of the above variants are selected, the units in question either start on the map, or appear as reinforcements during the course of the game (depending on the scenario).

Options and Variants That Favor the German Player

Air Parity (Major Effect on Play Balance):

This option assumes that *neither* side had air superiority over Velikiye Luki during the winter of 1942–43, and that Russian and German air strengths in the area were roughly equal. This could easily have happened if the Luftwaffe and the German High Command had made a few different decisions regarding aircraft and the air war, and/or if the German situation on the southern portion of the front (near Stalingrad) was less critical.

If this option is selected, both sides receive approximately equal levels of ground support and air interdiction. In addition, the Germans (only) have an air supply capability for isolated HQ's.

Limited Axis Air Superiority (Greatest Effect on Play Balance):

This option assumes that the Luftwaffe was either a larger and stronger force than was actually the case during the winter of 1942–43, or that (for whatever reason) much of the German airpower that was historically assigned to the Stalingrad area during the time period covered by the game was committed to the Velikiye Luki sector instead.

If this option is selected, the German player receives more ground support and air interdiction than the Russian player. In addition, the Germans (only) have an air supply capability for isolated HQ's.

Note that the Air Superiority options for "Total Allied" (i.e., Total Russian) and "Total Axis" Air Superiority are not selectable. This is because either situation in the air war during the winter of 1942–43 would have been historically incompatible with the ground battle as depicted on the map, and would have led instead to a fundamentally different ground situation, which is beyond the scope of the game.

German 1st Fallschirmjager Division in Play (Major Effect on Play Balance):

The 1st Fallschirmjager (Airborne) Division was a *very* elite unit – not only was it the first German airborne division, but it was also the first division–sized airborne unit in the world, and it played an impressive part in numerous German victories during

the first two years of the war. Originally known as the 7th Flieger Division, it was officially redesignated the 1st Fallschirmjager Division in October 1942, just before the time period covered by the game. (In spite of the official name change, it was still frequently referred to as the 7th Flieger until the spring of 1943.)

Between November 1942 and January 1943, the 1st Fallschirmjager Division was in 9th Army reserve near Velizh, about 30 kilometers south of the Velikiye Luki map edge. Although the entire division was available and could have been sent to Velikiye Luki, for several reasons only one of its battalions was actually committed, and it arrived too late to significantly affect the outcome. Had the German forces fighting near Velikiye Luki been reinforced in a timely manner by the entire 1st Fallschirmjager Division, the outcome of the battle might have been very different.

If this variant is selected, the entire 1st Fallschirmjager Division either starts on the map, or appears as a reinforcement early in the game (depending on the scenario).

More Cloudy and Warmer Weather (Major Effect on Play Balance):

As discussed above under Variant #1, winter conditions which are slightly colder and drier than average are actually better for military operations in this part of Russia. Conversely, winter conditions which are slightly warmer and wetter than average are *worse* for military operations here, because the swamps and rivers remain unfrozen longer, and also because more snow accumulates, further hindering movement and combat.

If both the "More Cloudy" and "Warmer" options are selected on the Weather menu, the weather in the game will favor the side which does **not** have air superiority **and** is on the defensive early in the game (usually the Germans). This is because the mobility–enhancing hard freeze ground conditions begin later and last for a shorter period of time before deep snow accumulates, and also because the worse sky conditions decrease the availability and effectiveness of airpower.

More Infantry Replacements (Moderate Effect on Play Balance):

If this variant is selected, the 6th Luftwaffe Field Division does *not* appear in the game, and the German player receives additional infantry replacement points instead. (Note that these extra replacement points are available *even* in scenarios where the 6th Luftwaffe Field Division would not have arrived anyway.)

Although it sounds like a simple matter, this is actually the *least* likely of all the Historical Options and Variants. It presumes that Adolf Hitler and/or Hermann Goering were very different kinds of people, less inclined to adopt self–serving political solutions to military problems, and more willing to listen to, and be persuaded by, rational arguments put forth by their military advisors.

As discussed earlier in the section on "Units," the Luftwaffe field divisions were a product of the internal infighting and empire–building that helped doom the Third Reich. Because of heavy German air losses between 1940 and 1942 (especially among bomber units), and the inability of the German aircraft industry to replace these losses, by September 1942 the Luftwaffe had a personnel surplus of some 200,000 men. These were not primarily air crews but rather ground crews, mechanics, drivers, staff officers, radio operators, and office workers who were no longer needed in their original capacities due to the decrease in German air strength. Although the German Army wanted these men and laid claim to them, Hermann Goering (with Hitler's approval) would not allow their transfer, and insisted that they remain in the Luftwaffe and be formed into Luftwaffe field (i.e., infantry) divisions, in spite of the fact that most of them had little or no training as infantrymen. This was done over the objections of military professionals in both the Army and Luftwaffe. In all, 22 of these Luftwaffe field divisions were created, and they proved to be a disastrous waste of high–quality manpower. They were committed to combat without sufficient training or leadership, performed poorly in action, and suffered from excessive and unnecessary casualties. However, given a few months of proper infantry training and distributed as replacements under regular German Army NCO's and officers, these same men would have significantly strengthened the German Army at a critical stage of the war. In game terms, *each* of the ineffective Luftwaffe field Divisions cost the German Army approximately 90 infantry replacement points, enough to bring *two* badly depleted infantry divisions back up to full strength and capability.

This variant assumes that Hitler and/or Goering "saw the light," and transferred the surplus Luftwaffe personnel to the Army for training as infantry replacements. As mentioned above, if this variant is selected, the 6th Luftwaffe Field Division does not appear in the game, and the German player receives 90 additional infantry replacement points instead. (More precisely, 90 is the total additional replacement points received over the duration of

the Campaign Game; proportionately fewer are received in shorter scenarios.)

At the beginning of each scenario, the game automatically uses a number of these replacement points to increase the initial strength of German infantry units, both those that begin on the map and those that arrive as reinforcements. The remainder of the extra replacement points are assumed to become available gradually over the length of the Campaign Game, and are added to those that normally "arrive" each day.

No Restrictions on Velikiye Luki Garrison (Minor Effect on Play Balance):

Velikiye Luki is one of several strategically important cities in the region between Leningrad and Moscow. This whole area of Russia is characterized by very difficult terrain, with numerous lakes, rivers, and large expanses of swamp and trackless forest. Much of the terrain is essentially impassable for heavy military traffic, at least for most of the year, and cities such as Velikiye Luki form natural and obvious "choke points" along the few good roads and rail lines. It made good military sense to fortify and garrison these key cities, and the Germans were quick to do so.

By November 1942, the Germans had occupied Velikiye Luki for over a year, and had been preparing its defenses for much of that time. In addition to building bunkers and other types of fortifications, they established a semi–permanent garrison consisting of miscellaneous rear–area support and security units, which could be committed to front–line combat in an emergency. Perhaps more significant than the security troops was the small stockpile of food, ammunition and other equipment that they also established in Velikiye Luki, and which was reserved for the use of the garrison in case the Russians surrounded the city. This stockpile, combined with some limited and mostly ineffective air drops of supply, was the principal factor that allowed the German garrison to hold out for a period of almost two months after it was surrounded.

Although it is not obvious that any better use could have been made of the troops and supplies which the Germans withheld to defend Velikiye Luki in case of a prolonged siege, an alternate strategy that might have worked just as well or better in the long run would have been to make immediate use of the extra resources at Velikiye Luki to counterattack and destroy the Russian forces advancing on the city. Therefore, this variant assumes that, soon after the beginning of the Russian offensive against Velikiye

Luki, the Germans decided on an all–out counterattack as the best method to defend the city, rather than attempting to "ride it out." If this variant is selected, there are no restrictions on the supply level that may be assigned to the Velikiye Luki HQ, the units that are attached to it are not subject to any movement restrictions, and they are able to re–attach to other HQ's like all other German units. In addition, the separate stockpile of supply tonnage that is normally reserved for the Velikiye Luki Garrison is added to the overall German stockpile at the beginning of the game, and the Old Town Citadel and West Railroad Station in Velikiye Luki no longer function as sources of supply for any German units.

Historical Options and Variants - Utah Beach

At the beginning of each game, players may select one or more of the following Historical Options and Variants. Each of them constitutes a plausible alternate history, and each of them changes the game situation into something that did *not* actually happen in reality, but *could* have. More than one of them may be in effect at the same time, although not all of them are relevant in every scenario. Only the ones that make sense with the chosen scenario are selectable. Historical Options and Variants may be selected only at the **beginning** of each game, and may not be changed after leaving the Scenario Selection Screen.

Within the Scenario Selection Screen, the Historical Options and Variants are organized into the categories of "Weather", "Air Superiority", and "Variants." Within this section of the manual, they are organized into two different categories, based on their effect on the play balance of the game.

Note: most of these variants exert a **strong** influence on the play balance of the game. For that reason, players should feel free to use them to adjust the play balance, if the opponents are not of equal skill or experience. In the list that follows, the relative effect of each variant on play balance is stated immediately after its name.

Options and Variants That Favor the American Player

Delayed Arrival of the German 91st Division and/or 6th Fallschirmjager Regiment (Greatest Effect on Play Balance):

Prior to May 1944, German units in the Utah area were limited to the 243rd and 709th Infantry Divisions, the division–sized Cherbourg Garrison, and approximately 35 batteries of coastal artillery. This was clearly an inadequate force, given the strategic importance of Cherbourg and the long coastlines of the Cotentin Peninsula. However, numerous other sectors along the French coast were just as weak, and so in May the Germans began moving units from the French interior to the coast, and also reinforced them with additional divisions and smaller units transferred from Germany. This was done mostly at Rommel's insistence, although Hitler readily agreed with *some* of what Rommel wanted. The 91st Infantry Division and the 6th Fallschirmjager (Airborne) Regiment, both strong, high–quality units, were sent directly from Germany to the Cotentin

Peninsula, where they arrived in mid–May. These new units added significantly to the German strength in the Utah area. Following the invasion, these two units were responsible for much (if not most) of the resistance encountered by the American VII Corps. If the arrival of either or both of these German units had been delayed past June 6th, the Americans would have found their objectives much easier to achieve.

These two variants assume that either the 91st Infantry Division, the 6th Fallschirmjager Regiment, or both (as selected on the "Variants" Menu) were still in transit to Normandy on D–Day. This could easily have happened due to a delay in issuing their movement orders, or from the effects of Allied air interdiction on the French transportation network. The units selected do not begin the Campaign Game on the map, but arrive as reinforcements. Exactly when they arrive depends on the weather and Allied air interdiction.

More Clear Weather (Major Effect on Play Balance):

The actual weather conditions over Western Europe during the summer of 1944 were abnormally bad. In fact, it was the worst summer weather England and France had experienced in many decades. It was cloudy, cold, windy, and wet, with severe storms – more like winter than summer. The bad flying conditions and rough seas hindered the Allies greatly.

If the "More Clear Weather" option is selected, the weather in the game corresponds to an average summer for Western Europe, which consists of more clear weather, less cloudiness, and no storms. Better weather therefore improves the availability and effectiveness of American airpower, as well as eliminates the numerous difficulties for the American side caused by the storms.

Under this option, each weather condition occurs the same percentage of the time as it does during an *average* summer in Western Europe. These percentages are as follows; the data is based on the actual weather experienced during the Battle of Britain, summer 1940.

Clear	Light Overcast	Moderate Overcast	Heavy Overcast	Storm
21%	16%	35%	28%	0%

Original Airborne Plan (Major Effect on Play Balance):

By the second week of May 1944, the Allied plan for the invasion of Normandy was essentially complete. Accurate intelligence information had been assembled on the identities, locations, and strengths of all German units in Normandy. The German forces in the Utah area were known to be fairly weak and to consist of the 243rd and 709th Infantry Divisions, plus coastal artillery, and a Cherbourg garrison composed of miscellaneous smaller units. Every aspect of the invasion plan had been checked and double–checked; everything was ready. Then, at the last minute, horrified Allied intelligence officers discovered significant German re–deployments in Normandy, including the arrival of major additional reinforcements. Had the carefully–guarded plan for "Operation Overlord" been compromised? Did the Germans know everything?

The German reinforcements arriving in the Utah area were quickly identified as the veteran 91st Infantry Division and the elite 6th Fallschirmjager (Airborne) Regiment. After several very worrisome days, the Allied commanders and intelligence officers had received enough information to conclude that the heightened German activity was just due to general preparedness on the enemy's part. Nothing indicated that the Germans *knew* Normandy would be the invasion site, and so the invasion could still go forward generally as planned. However, the arrival of strong German reinforcements in the Utah sector did make the original (and very bold) American airborne plan seem too risky. This plan called for the 82nd Airborne Division to be dropped on the *west* side of the Cotentin Peninsula, over 25 miles (40 hexes) from Utah Beach. The 82nd's mission there was to cut the west side of the peninsula (and thereby isolate Cherbourg) right at the very beginning of the invasion. Given the German strengths and deployments as they stood in April, it was a good plan that probably would have worked. But the Allied commanders were sufficiently "spooked" by the arrival of the extra German units just two weeks before D–Day that they decided to move the 82nd's drop zones some 15 miles to the east, much closer to Utah Beach, and to give the 82nd the more conservative mission of capturing St. Mere Eglise and two nearby bridges over the Merderet River. The 101st Airborne Division's assignments (securing the causeways out of the coastal swamp behind Utah Beach and capturing Carentan) were left unchanged.

This variant assumes that the American commanders kept their original airborne plan for the Utah sector and that the 82nd

landed in its original drop zones on the western side of the Cotentin Peninsula.

Note: if the German 91st Division is present, this option results in a very high–risk (but potentially high–gain) situation for the American player. If the 91st is *not* present, there is less risk to the more aggressive original airborne plan, and the overall game balance then strongly favors the American player.

Extra American Units (As–Planned Arrival of the 321st and 907th Artillery Battalions of the American 101st Airborne Division) (Very Minor Effect on Play Balance):

Due to the lack of enough gliders, two of the 101st Airborne Division's artillery battalions, the 321st and 907th, had to cross the Channel by ship. They were supposed to unload at Utah Beach at mid–day on the 6th (D–Day), and the men did, but the guns were on another ship that was "temporarily misplaced" and not unloaded until the 9th. The 101st's third artillery battalion, the 377th Parachute Artillery, lost all but one of its guns in the initial drop on D–Day morning, and replacement guns were not delivered until June 20th. As a result of these mishaps, the 101st Airborne had to make do without any of its own artillery until June 10th.

This variant assumes that the 321st and 907th Glider Artillery Battalions were unloaded at Utah Beach on June 6th as planned, and therefore were in position to support the rest of the 101st when the Campaign Game begins.

Options and Variants That Favor the German Player

Limited Allied Air Superiority (Moderate Effect on Play Balance):

This option assumes that the Allies still had air superiority over Western Europe in 1944, but that it was less than total, and that the Luftwaffe was at least capable of making its presence felt on the battlefield. This could easily have happened if the German High Command had made a few different decisions regarding aircraft production and the air war between 1942 and 1944, and/or if the Germans had converted their economy to a total war footing in 1942 instead of 1943.

If this option is selected, fewer American aircraft are available for ground support, Allied air interdiction has less effect on

German strategic movement and the arrival of German supply and reinforcements, German air attacks and air interdiction have some effect on the arrival of American supply and reinforcements, and the German player may request and receive some ground support.

Although the *historical* Air Superiority Option was "Total Allied", it is interesting to note that the Allied commanders all *assumed* that the Luftwaffe was still a force to be reckoned with, and made their plans accordingly. Once the invasion was launched, the lack of any significant German aerial opposition actually came as a pleasant surprise to the Allied troops and their commanders. Therefore, in the air at least, this option also represents what the Allies *expected* to encounter.

Air Parity (Major Effect on Play Balance):

This option assumes that *neither* side had air superiority over Western Europe in 1944, and that Allied and German air strengths were roughly equal. This could have happened if, following its defeat in the Battle of Britain in 1940, Germany had taken the lesson to heart and had subsequently placed much greater emphasis on maintaining and improving its own airpower. Although it is unlikely that the Allies would have launched a major invasion without first achieving at least some degree of air superiority, there are at least two events that could have led to that result: a major strategic miscalculation, and/or political necessity, such as the imminent collapse of the Soviet Union unless something were done immediately to draw off as much German strength as possible.

If this option is selected, both sides receive approximately equal levels of ground support and air interdiction. In addition, the effects of Allied air interdiction on German strategic movement, supply, and reinforcements are greatly reduced; German air interdiction has a negative effect on American strategic movement, supply, and reinforcements; and both sides have an air supply capability for isolated HQ's.

Limited German Air Superiority (Greatest Effect on Play Balance):

This is the *least* likely of all the Historical Options and Variants. It is difficult to imagine a situation where the Allies would actually have launched a major invasion in the face of superior German airpower, even if the Soviet Union were on the verge of collapse and this was seen as absolutely the last opportunity to

keep Russia in the war and to regain a foothold on the Continent. However, given good secrecy and security, and if the attention of the German High Command was focused elsewhere, a surprise invasion might have been carried out.

If this option is selected, the German player receives more ground support and air interdiction than the American player. In addition, the German player has an air supply capability for isolated HQ units, and the American player does not.

If the war was going so well for the Germans that they still had some measure of air superiority over France in 1944, it is also likely that they would have had fewer troops guarding the "Atlantic Wall". Therefore, delaying the arrival of both the German 91st Infantry Division and the 6th Fallschirmjager Regiment in combination with this option makes good historical sense. It also preserves at least *some* degree of play balance. Adding the original American airborne plan as well should just about even things up, and should make for a wild and free–wheeling game that is not *too* divorced from reality.

There is no "Total German" Air Superiority option, because a major Allied invasion under such extremely unfavorable circumstances could not have succeeded, and would never have been seriously contemplated.

German 319th Division in Play (Major Effect on Play Balance):

Just west of the Utah Beach map area, only a few miles off the French coast, lie the British Channel Islands of Jersey, Guernsey, Alderney, and Sark. All four of these small islands were occupied by the Germans in July 1940, immediately after the fall of France. They were the only part of the British home territories to be occupied by the Germans in WWII, and due to Hitler's obsessions they played a much larger role in German defensive planning than their actual value warranted.

As early as 1941, the Germans (at Hitler's direction) began a massive fortification effort on the islands. By 1944, they had ferried over and emplaced a total of 65 pieces of heavy coastal artillery (6" to 12" guns), almost 400 light and heavy anti–aircraft guns, and had constructed huge numbers of concrete bunkers, special beach defenses, tank traps, etc. They had dug tunnels and laid mines and barbed wire all over the islands, and had established a very powerful garrison consisting of over 40,000 men, including the entire 319th Infantry Division, reinforced by a panzer battalion and two Ost battalions. These obscure islands

were probably the strongest part of the entire "Atlantic Wall"! Hitler's intention was to make the islands impregnable, and he succeeded – the Allies never had any serious plans to invade them; they weren't worth the cost.   Unfortunately for the Germans, making them impregnable wasn't worth the cost, either. When it was deployed to the islands in 1941, the 319th was just an average German infantry division. But the 319th was able to stay out of harm's way on the Channel Islands, and by 1944, when the rest of the German Army had been bled white in Russia, the 319th was still at full strength and was one of only a handful of German infantry divisions that still maintained the early–war nine–battalion organization.   With its attached panzer battalion and Ost units, in June 1944 the 319th was possibly the strongest regular infantry division in the entire German Army. From D–Day until the end of the war, this impressive division continued to stand guard on the Channel Islands, preparing to defend against an invasion that the Allies never seriously contemplated. When the war in Europe ended in May 1945, the 319th came out of its island bunkers and went into captivity without ever having fired a shot.

The Channel Islands *were* a good location for coastal artillery, because from there the heavy guns could dominate the Bay of St. Malo and protect the German shipping route between Brest and Cherbourg. However, a much better and more logical use for the 319th would have been to defend the nearby port of Cherbourg. What Hitler failed to realize was that the Channel Islands were important only so long as *both* Brest and Cherbourg remained in German hands; once either of those ports fell, the islands lost *all* of their strategic value. Furthermore, as one of the larger ports on the French mainland, Cherbourg was much more important for the Allies to take, and for the Germans to hold, than any offshore islands could ever be.

This variant assumes that the above argument was presented to Hitler early in 1944 and that he was persuaded by it.   Several months prior to D–Day, the 319th, including its panzer and Ost battalions, could have been transferred to Cherbourg to reinforce the garrison there. The coastal artillery could not have been so easily moved, and the flak units would still have been needed on the islands to protect the big guns.

If this variant is selected, the 319th is added to the initial forces of the Cherbourg Garrison.   The 319th is subject to the same restrictions as all other units of the Cherbourg Garrison (i.e., its units may not voluntarily move more than 15 hexes from the center of Cherbourg, and may not be assigned a supply level

higher than defensive). The 319th HQ uses the Naval Arsenal in Cherbourg as its source of supply, and additional tonnage is added to that stockpile to compensate for the larger–than–historical garrison.

No Restrictions on Cherbourg Garrison (Moderate Effect on Play Balance):

As part of their defensive preparations all along the Atlantic Wall, the Germans paid particular attention to fortifying all the large and medium–sized port cities, in an attempt to deny their use to the invading Allies. Each of the larger ports had some sort of quasi–independent status as a "fortress command", and each of them was *supposed* to have enough troops and supplies to allow it to hold out indefinitely, even if surrounded. None of them were actually *that* strong, but in the case of Cherbourg, the large German garrison there still had plenty of ammunition, food, and other supplies when the city fell at the end of June, even though the garrison had been effectively isolated for almost two weeks.

Few historians have questioned the German strategy of heavily fortifying and guarding these key ports, which was an obvious and logical thing to do. The strategy also paid off, at least to some extent, because it took the Allies far longer than they planned to capture each port, repair the damages from German demolitions, and get the port back into service. In the case of Cherbourg, Allied pre–invasion plans called for it to be captured by mid–June and to begin receiving cargo before the end of June. As it turned out, the stubborn German defenses and thorough demolitions combined to keep the port out of service for an extra month, and by the time Cherbourg was finally able to begin receiving cargo at the end of July, the Allies had unloaded approximately 30 percent less cargo in Normandy than they had originally planned. The manpower buildup was less affected, since it was easier to unload men over the beaches than supplies and heavy equipment.

Although it is not obvious that any better use could have been made of the troops and supplies which the Germans withheld to defend Cherbourg, an alternate strategy that might have worked just as well or better in the long run would have been to make immediate use of the extra resources at Cherbourg to put the maximum possible pressure on the Utah beachhead as early as possible. Therefore, this variant assumes that, soon after the invasion, one of the German commanders convinced Hitler to commit the troops and supplies located at Cherbourg to immediate front–line operations, in an attempt to crush the Utah beachhead before it became too large.

If this variant is selected, the Cherbourg HQ may be assigned a supply level higher than defensive, the units that are attached to it are not subject to any movement restrictions, and they are able to re–attach to other HQ's like all other German units. In addition, the separate stockpile of supply tonnage that is normally reserved for the Cherbourg Garrison is added to the overall German stockpile at the beginning of the game, and the Naval Arsenal in Cherbourg no longer functions as a source of supply for any German units.

Note: if this variant is selected in combination with the "German 319th Division in Play", their combined effect on play balance should be regarded as "very major".

Extra German Units (Arrival of the 17th SS Recon Battalion and the 943rd Infantry Regiment with the Rest of Their Divisions) (Minor Effect on Play Balance):

On D–Day, the 17th SS Panzergrenadier Division was in reserve south of the Loire River, almost 200 miles from the invasion beaches. Late on that day, it received orders to move to the front, and it began its northward journey by rail the next day (June 7th, the day the Campaign Game begins). What *should* have been an easy one–day railroad movement instead became a six–day ordeal, due to the fact that all the bridges over the Loire River were destroyed by Allied aircraft on the 6th and 7th. When the lead unit of the division, the 17th SS Recon Battalion, arrived near the front on June 10th, there was a gaping 12–mile–wide hole in the German lines south of Omaha Beach, and the 17th SS Recon was the *only* unit available to fill the gap. By the time the bulk of the division arrived two days later on the 12th, the situation south of Omaha Beach had stabilized, but the Recon Battalion could not be spared, and so it remained in the Omaha sector, attached to the 2nd Panzer Division. It was not released to return to its own division until July.

A similar circumstance befell the 943rd Infantry Regiment of the 353rd Infantry Division. The 353rd was located near the port of Brest in Brittany on D–Day, also approximately 200 miles from the invasion beaches, and was ordered to begin moving to the front in Normandy on June 10th. Railroad movement was impossible, and the division had relatively few trucks, so most of the men had to walk. On June 16, the two battalions of the 943rd Regiment arrived by bicycle at St. Lo, where they immediately had to be placed into the line to help defend the city. By the time the rest of the 353rd arrived (*still on foot*) four days later on the

20th, St. Lo was holding, but catastrophe loomed further north, where the Americans had broken out of the Utah beachhead, advanced to the west coast, and isolated the bulk of the German forces in the Cotentin Peninsula. The 353rd had to go straight into the line near La Haye du Puits, without its 943rd Regiment.

This variant assumes the front–line situation in the neighboring Omaha sector is better for the Germans than it was historically, and the 17th SS Recon Battalion and the 943rd Infantry Regiment are not needed in that area. These units therefore arrive on the map as normal reinforcements, probably in advance of the rest of their divisions.

General Comments and Design Philosophy

Our admittedly ambitious goal for Utah Beach was to produce the most comprehensive, accurate, and realistic operational–level wargame yet published, in either cardboard–and–paper *or* computer form, and *still* keep the final product completely playable and user–friendly. You, the players, are the ones who will decide whether or not we have succeeded.

Why Do This On a Computer?

Conventional board wargames (i.e., those that utilize a paper map and cardboard unit counters rather than a computer) have inherent limitations in the important areas of limited intelligence, data manipulation, and simultaneous activity. A *proper* treatment of limited intelligence *requires* some sort of blind or umpired play, but this has proven to be especially difficult in the board wargame format. To make matters worse, the quantity of data that an unassisted human player can be expected to keep track of and use is surprisingly small. And finally, the simultaneous integration of the activities of both sides in a game, to the extent that they are in reality, is a very difficult and unrewarding task in a board wargame if there are more than a handful of units involved. The old "realism vs. playability" debate in wargaming is actually just a consequence of these inherent limitations of board wargames. More "realism" (i.e., completeness and accuracy) requires more data and complexity, which, for unassisted human players, then makes the game less "playable". The only solution to this dilemma is a technological one . . . computers! Carefully–designed computer wargames *can* include complex and realistic treatments of all the elements mentioned above and more, *without* compromising playability. As evidence for this claim, we offer Utah Beach.

Realism of Command

All wargamers want their games to be "realistic", but what does realism mean in the context of a wargame? John Hill (designer of the excellent tactical wargame <u>Squad</u> <u>Leader</u>) has said that, on a scale of 1 to 10, the most realistic wargame possible would be a "2". He is, of course, referring to the fear, pain, suffering, and death of the real thing. On a very tactical level (like <u>Squad</u> <u>Leader</u>), John is probably right. At that level you don't *want* too much realism.   You play <u>Squad</u> <u>Leader</u> in comfortable surroundings to enjoy yourself, and you will survive the game.

Your historical counterpart might not have survived, and in any case his life and surroundings were miserable. But as we move up to larger units, John's statement becomes less true. Colonels and generals are usually more concerned with how to fight and win their battles than with their own personal survival, and they certainly face much less privation than the average soldier. And while preserving the lives of as many of their men as possible is always in the back of their minds, such mid– and upper–level officers usually have to make their decisions without regard for the detailed fate of any *specific* individuals. There is no reason why a game on the scale of Utah Beach can't be a completely accurate and realistic re–creation of the military problems and options faced by the field commanders.

Players in Utah Beach represent the middle or operational range of ground force command, i.e., the regimental through corps commanders. This level of command is responsible for directing the actions of battalions, regiments, and divisions – where they move, whether they attack or defend, how much supply they receive, etc. Most lower level (tactical) and higher level (strategic) considerations are beyond the control of such commanders, and so we made them beyond the control of the players as well. Tactical–level considerations in Utah Beach are handled in an abstract or random manner; strategic–level considerations are presented as fixed and not subject to change. An example of an abstracted tactical level consideration is what happens during any battle: the players are not able to direct the fire or movement of individual tanks or infantry squads, because the officers at the level of command represented by the player normally exercised no direct control over such details.   The best example of a strategic   level   consideration   imposed   from   above   is   the geographic objectives in each scenario: the players are not able to choose their own geographic objectives because, in reality, such decisions were made at a higher level of command than that represented by the players. In the Campaign Game (for example), the American player has been "ordered" to take Cherbourg as quickly as possible, and the authority to alter that objective does not reside at the level of command represented by the player.

Our primary design objective for Utah Beach was what we call "realism of command". We wanted the players to be faced with the same situations, problems, concerns, unknowns, and *limitations* that their historical counterparts were. We also wanted the same solutions, options, incentives, and trade–offs that existed in reality to exist in the game. If something in the real world depended upon or affected something else, we tried to preserve that relationship in the game. If something was reasonably

possible in reality, we tried to make it possible in the game. If something was impossible or very unlikely in reality, we tried to make it impossible in the game. We tried to design and construct the game so that the strategies, tactics, and decisions that worked or were correct in reality also worked or were correct in the game (and for the same reasons). We intended the game to be a model of reality, and we believed that, with the help of a computer, there was no reason why it couldn't be a *good* model.

What Happened to D–Day?

Many players are no doubt wondering why the Campaign Game of Utah Beach begins on the day *after* D–Day, and does not include the events of D–Day itself. The answer relates back to the level/realism of command concept described above. While the events of D–Day may be very interesting and are certainly very important historically, they are also inappropriate to include from the standpoint of the level of command represented by the players in Utah Beach. For the Allies, D–Day was a very carefully and completely planned and rehearsed operation; for the Germans, it came as a total surprise. The effect was that the officers on *both* sides at the levels represented by the players (and above) had essentially *no* real–time control over what happened on D–Day. Once the invasion "machine" was put into motion, there was very little that any of the mid– or upper–level commanders could do except read fragmentary reports and "wait for the smoke to clear". Rather than have *all* the units on *both* sides move and attack under the exclusive control of the computer for the entire first day of the invasion, we chose to start the game on June 7th (D+1), when the commanders at the levels represented by the players had regained their control of events and once again had important decisions to make.

Levels of Difficulty, Play Balance and the Historical Options and Variants

Players familiar with other computer wargames may notice that Utah Beach has a different approach regarding multiple levels of difficulty than many other games. Obviously, any game that seeks to attract and satisfy a large cross–section of the gaming public must be able to provide players of widely differing abilities with equally challenging situations. Many of the other computer wargames published to date have multiple levels of difficulty that are arrived at by simply making the computer's units stronger or more numerous, the human player's units weaker or less numerous, or some combination. Usually, no attempt is made to

make the game more difficult or easier by having the computer actually *play* better or worse; it just gets stronger or weaker forces relative to the human player. This approach may be acceptable for non–historical games or for games that are not trying to portray a specific historical battle as accurately as possible. However, for games such as Utah Beach, which *are* trying to be accurate models of well–known historical events, such tinkering with the relative strengths and capabilities of actual historical units makes a mockery of the intended historical accuracy of the game.

Utah Beach seeks to accommodate players of differing abilities by means of the Historical Options and Variants, each of which constitutes a plausible (i.e., historically reasonable) alternative to the actual events. Rather than simply making all the American units twice as strong (an adjustment for which there would be absolutely *no* historical justification), a game of Utah Beach can be equally biased in favor of the American player by assuming that the German 91st Infantry Division was delayed in reaching Normandy, an event that could easily have happened. In this way, the game becomes a more complete and accurate model of reality.

What is Missing?

In spite of the long list of features which are included in Utah Beach, we do not believe the game is perfect, and there are areas where we believe its realism can be improved. A number of these areas are listed below, organized by subject.

None of these factors had a significant effect on the outcome of the invasion in the Utah sector, and so, with only limited time and resources at our disposal, we had no choice but to concentrate our efforts on the more important features. In the future, we hope to expand the game system to include some of these things.

Terrain, Units and Movement

Although there is some elevated terrain within the area covered by the game, hills are not included as a separate terrain type.

It would be useful to be able to designate a "group" of units (not necessarily an entire stack) that would all receive the same orders at the same time, and would all stay together when moving.

It would be useful and very realistic to be able to break most battalion–sized units down into their component companies.

It would be useful for the HQ Sidebar to "show" all the battalions of a particular regiment and all the companies of a particular battalion.

In reality, motorized infantry and semi–motorized engineer units could dismount from their vehicles when necessary and leave them behind to facilitate movement through difficult terrain. Units in the game cannot do this.

In reality, a unit's morale is influenced by whether it won or lost the last battle it participated in. The game does not take this into account.

Supply

It would be useful and realistic to assign supply on a unit–by–unit basis, so that units attached to the same HQ could be assigned different supply levels.

The game calculates the lengths of supply lines in hexes; it would be more realistic to use strategic movement points.

When a unit's supply line is cut, it would be more realistic for its supply state to decrease gradually, rather than suddenly.

Although artillery interdiction missions against the enemy's road net should have an effect on the enemy's supply lines, this is not included in the game.

Construction (or non–combat) engineer units are not included in the game, even though they did have an effect on supply through maintenance, repair, and improvements to the roads.   These units were also capable of combat duty in an emergency.

Artillery

It would be useful and realistic for some artillery units to be capable of immediate counterbattery fire, which would automatically attack enemy artillery units as soon as they revealed their locations by firing.

The guns of most German coastal artillery units had limited traverse, and generally could not fire into the half–circle facing

directly inland and away from the ocean. Such restrictions are not included in the game.

Ships and Naval Support

Because Utah Beach is a game about *land* combat in Normandy, we deliberately omitted or abstracted those aspects of the naval war which had the least effect on ground operations. These include individual variations among the ships within each class, and not allowing ships to be fired at, damaged, or sunk by German coastal artillery, mines, torpedo boats, or aircraft.

In reality, all of the larger warships (battleships and heavy cruisers) had secondary guns which also were used to fire at on–shore targets. Even though these secondary guns were large enough to justify separate barrage, support, and range values, they are not included in the game.

In reality, fewer ships would have been available for naval support if the Allies had not had total air superiority, due to the increased strength and activities of the Luftwaffe. However, this is not reflected in the game.

In reality, after naval support in the Utah area was canceled on June 18th, most of the larger warships returned to England and did not remain on station off the Normandy coast. The game takes this into account by increasing the victory point cost of naval support to the American player after June 17th. However, it would be more realistic for the American player to decide for himself, subject to various victory point incentives and penalties, the level of naval support he wanted and when it would be available. There should also be a realistic time delay (approximately two days) between the time that any changes are made with respect to the level of naval support and the time the change actually takes effect.

Aircraft and Ground Support

In reality, there was often a time delay of more than one turn between the time that some ground support missions, especially bomber missions, were requested and the time that the planes actually arrived. The game does not take this into account.

Reinforcements

In reality, German reinforcements sometimes arrived at less than full strength due to Allied air attacks on them while they were moving to the front. The game does not take this into account, and does not inflict losses on reinforcements due to the effects of enemy air interdiction.

In reality, commanders did not *have* to accept reinforcements if they felt they did not need them or could gain some other advantage by not taking them. It would be realistic for players to be able to decline reinforcements in exchange for some other benefit (such as a victory point bonus), but this is not included in the game.

Replacements

In reality, both sides converted surplus rear–area personnel into additional replacements for their front–line infantry units; the game does not take this into account.

What About the Partisans in Velikiye Luki?

One well–known aspect of the Russian front that is not covered in this game is the partisan movement. Partisans played very little, if any, role in the battle for Velikiye Luki, and there were several reasons for this. First and foremost was the fact that most partisan bands operated *deep* in the German rear, typically 100 or more miles behind the front line, specifically in order to *avoid* contact with regular German combat units. Compared to almost all regular combat units, even the best partisan units were poorly supplied, lightly armed, and deficient in heavy weapons, training, and professional leadership. Most partisan units were incapable of winning a prolonged, stand–up battle against significant opposition, and they knew it. The partisans were a threat to the Germans because they conducted sabotage, ambushes and surprise attacks against trains, supply columns, and weak security forces deep in the rear, and created a general diversion of scarce German resources, *not* because of foolhardy attacks on powerful German combat units. Even as late as 1944, by which time there were huge areas in the German rear which had been virtually ceded to the partisans and which were devoid of any significant German presence, German combat units retreating from the front were still able to pass through these same "partisan–controlled" zones with impunity, because regular combat units of battalion size and larger had little to fear from the lightly–armed partisans.

A second (and perhaps more surprising) factor was that winter was the *worst* time of year for the partisans to operate. To begin with, long–term, outdoor "wilderness" survival during the frigid winter months was a difficult proposition even for native Russians, and required most of their day–to–day attention; little energy or resources were left over to fight the Germans. Second, most partisan units were poorly equipped for winter combat, and did *not* have access to proper winter combat clothing, snow smocks, skis, etc. Due to the deep snow and their bulkier, heavier winter clothing, the mobility of the partisans was also significantly reduced. Third, winter removed most of their natural cover and concealment. Unlike summer, it was very difficult for partisans to move around during the winter months without being observed. They were always vulnerable to aerial observation and attack anyway, and the wintertime loss of seasonal vegetation greatly increased the danger to the partisans from German aircraft, some of which were usually available for anti–partisan missions. In addition to the lack of vegetative cover, the smoke from the partisan's cooking and camp fires was much more obvious in the winter, and of course all their movements left readily visible tracks and trails in the snow. German reconnaissance aircraft and security patrols looked for such clues, and attacked the most obvious and/or most vulnerable partisan camps whenever possible. The cumulative effect of these factors was that partisan capabilities were *greatly* reduced during the winter months.

Historical Simplifications

No wargame, not even a complex and advanced computer wargame, can be as detailed as the real thing. The art of game design lies in knowing, or deciding, when and where it is possible to simplify matters, without compromising what it is you are trying to portray. Listed below are two of the "judgment calls" which we made in designing V for Victory™ games.

1. As stated a couple of times in the manual, HQ units do not represent the actual command post only, but rather a number of rear–area units, many of which are concerned in some way with supply. A typical HQ unit with 2 or 4 strength points represents 2,000 to 4,000 men, organized into several battalion– and company–sized units such as quartermaster, transportation and truck battalions, signal, medical and maintenance battalions, replacement battalions, bakery and butchery companies, military police companies, field post office units, and so on. Now obviously, all this stuff was never present in one hex at the same

time. In fact, it was almost always spread out over a rather large area. However, breaking the HQ down into its component units and showing each of them in its correct location on the map would have been a huge complication, for very little gain. At the other end of the spectrum, not having HQ units at all would mean a *much* less realistic portrayal of supply lines, which would be a serious detraction from the operational accuracy of the game. The point is that representing HQ units the way we have is actually a compromise, intended to show the primary purpose and effect of activities and operations in the rear area, with no more details or complications than absolutely necessary.

2. Most of the scenarios in Market–Garden, including the Campaign Game, begin on the 10:00 AM turn of September 17, 1944. As most students of the battle will know, the air drops actually occurred at noon that day (12:00 PM). However, fitting the correct September sunrise and sunset times into the V for Victory™ time scale and turn sequence dictated three daylight turns, beginning at 6:00 AM, 10:00 AM, and 2:00 PM. The result is an extra two hours of daylight for the Allied player the first day. This tends to help the Allies a little bit, and is a simple way to account for some of the advantages they enjoyed, namely the element of surprise and having the initiative that day.

3. Many players are no doubt wondering why the Campaign Game of Gold, Juno, Sword begins on the day *after* D–Day, and does not include the events of D–Day itself. The answer relates back to the level/realism of command concept described above. While the events of D–Day may be very interesting and are certainly very important historically, they are also inappropriate to include from the standpoint of the level of command represented by the players in GOLD • JUNO • SWORD. For the Allies, D–Day was a very carefully and completely planned and rehearsed operation; for the Germans, it came as a total surprise. The effect was that the officers on *both* sides at the levels represented by the players (and above) had essentially *no* real–time control over what happened on D–Day. Once the invasion "machine" was put into motion, there was very little that any of the mid– or upper–level commanders could do except read fragmentary reports and "wait for the smoke to clear". Rather than have *all* the units on *both* sides move and attack under the exclusive control of the computer for the entire first day of the invasion, we chose to start the game on June 7th (D+1), when the commanders at the levels represented by the players had regained their control of events and once again had important decisions to make.

Historical References Consulted

The amount of published literature and reference material dealing with the Western front of WWII is gigantic, and a complete study of all of it would literally require a lifetime. The following bibliography therefore makes no attempt to provide a complete reading list on the subject of Operation Market–Garden, the Velikiye Luki battle or the Utah Beach operation; the references listed consist only of those which we specifically consulted in researching and designing this game.

Books

Utah Beach

American Battleships, Carriers, and Cruisers, by Lenton, 1972. This is a small handbook–type volume with useful technical data on the American ships.

The Armed Forces of World War II: Uniforms, Insignia, and Organization, by Mollo, 1981. Although the emphasis of this attractively–illustrated book is on the uniforms and rank insignia of all the combatants, it does contain some interesting and useful text describing the equipment, organization, and history of each countries' armed forces.

The Army Air Forces in World War II, Volume Three: Argument to V–E Day, January 1944 to May 1945, edited by Craven and Cate, 1983. This is the relevant volume of the eight–volume Official History of the U.S. Army Air Force in WWII. It contains a great deal of interesting and useful information about American air operations prior to and during the campaign in Normandy.

Breakout and Pursuit, by Blumenson, 1961 (reprinted 1978). This excellent volume of the U.S. Army Official History of WWII picks up at the beginning of July 1944, where Cross–Channel Attack (see below) leaves off. Although the events described by this book occur after the time period covered by Utah Beach, it does contain detailed maps and terrain descriptions of the southern part of the Utah Beach map area, as well as information on the American 120th Infantry Regiment and 83rd Infantry Division.

British and American Artillery of World War 2, by Hogg, 1978. This is a very complete and detailed technical and operational history of the different kinds of British and American artillery pieces in WWII.

<u>British</u> <u>Cruisers</u> <u>of</u> <u>World</u> <u>War</u> <u>Two</u>, by Raven and Roberts, 1980. This is a massive book with complete technical data on the British cruisers that participated.

<u>Brute</u> <u>Force:</u> <u>Allied</u> <u>Strategy</u> <u>and</u> <u>Tactics</u> <u>in</u> <u>the</u> <u>Second</u> <u>World</u> <u>War</u>, by Ellis, 1990. Only one chapter of this excellent book is devoted to Normandy *per se*, but the consistent theme is both relevant and interesting. The author believes that the Allies emerged victorious from WWII *only* because of their overwhelming economic strength and vastly greater numbers of men, weapons, and supplies, and *not* because of better equipment, tactics, or military leadership. The book contains a lot of statistical data to back up that assertion, including some illuminating information on the manpower and material balance in Normandy. The book also gives a sobering critique of Allied strategy, tactics and generalship, which apparently (and unfortunately) required such huge margins of numerical superiority in order to prevail.

<u>The</u> <u>Chemical</u> <u>Warfare</u> <u>Service:</u> <u>The</u> <u>Chemicals</u> <u>in</u> <u>Combat</u>, by Kleber and Birdsell, 1966. Another of the many official U.S. Army Histories of WWII that we consulted while researching Utah Beach, this volume contains complete information, almost impossible to find elsewhere, on the American 4.2" heavy mortar units. Officially known as Chemical Mortar Battalions, these units were part of the U.S. Army Chemical Warfare Service, *not* the Artillery. (The American 4.2" mortar was originally designed before WWII to fire poison gas shells, but it was quickly discovered that the weapon was superbly suited to high–explosive shells as well, and it was in this capacity that it was actually used.)

<u>Combat</u> <u>Chronology</u>, <u>1941–1945</u>, compiled by Carter and Mueller, 1973. This volume is part of the Official History of the U.S. Army Air Force in WWII. It is a complete and very detailed day–by–day listing of *all* USAAF combat operations in WWII, including units, targets, numbers and types of planes, weather conditions, and losses.

<u>Condensed</u> <u>Analysis</u> <u>of</u> <u>the</u> <u>Ninth</u> <u>Air</u> <u>Force</u> <u>in</u> <u>the</u> <u>European</u> <u>Theater</u> <u>of</u> <u>Operations</u>, by Headquarters Staff, U.S. Army Air Force, 1946 (reprinted 1984). This book summarizes the history, organization, and operations of the American Ninth Air Force, which provided most of the ground support for the U.S. Army in Normandy. It also contains an extensive list of recommendations and lessons learned from the campaign.

<u>Cross–Channel</u> <u>Attack</u>, by Harrison, 1951 (reprinted 1977). This is the Official U.S. Army History of the Normandy

invasion. It is clear and well–written, and makes extensive use of both American and German archival documents and official records. The book describes the activities of both American and German units in great detail, and also contains a large number of very detailed, fold–out topographic battle maps which are essential to any serious study of the campaign.

<u>The Cross of Lorraine: A Combat History of the 79th Infantry Division, June 1942 – December 1945</u>, by the Divisional Historians, 1945 (reprinted 1986). This is the Official History of the American 79th Infantry Division in WWII, and it gives complete information on the movements and actions of the 79th and all its subordinate units. Although the text is quite detailed with regard to which units of the 79th did what, where, and when, the book lacks detailed maps, and the background and reasons behind many events are not covered. Except for one interesting chart at the end of the book, only minimal information is given about opposing German units. But these flaws are not *too* surprising, given the fact that most of the book was actually written and published before the war was over.

<u>D–Day</u>, by Young, 1981. This is a brief but well–illustrated overview of the events of June 6th. The focus of this book is on Omaha and the British beaches.

<u>D–Day: The Normandy Invasion in Retrospect</u>, edited by the Eisenhower Foundation, 1971. This book is a collection of papers and historical essays written to commemorate the 25th anniversary of D–Day. All of the papers and essays deal with one or more aspects of the campaign in Normandy. Most of them provide very interesting discussions of relevant historical questions, controversies, and might–have–beens.

<u>D–Day: Spearhead of Invasion</u>, by Thompson, 1968 (numerous subsequent editions). This concise, clearly–written, and well–illustrated book provides an excellent overview of both sides' preparations for D–Day, and of the invasion itself. Events after June 6th are not covered. One interesting aspect of the book is the very large number of D–Day photographs it contains, an average of one per page, most of which have not been published in other books.

<u>Dropzone Normandy</u>, by Crookenden, 1976. This is a very complete and detailed history of the initial airborne assault.

<u>Eisenhower's Lieutenants: The Campaign of France and Germany 1944–1945</u>, by Weigley, 1981. This well–written book gives an excellent and very interesting inside look at

the U.S. Army during the last year of the war, with emphasis on individual American leaders and their personalities and decisions. In addition, the author devotes considerable attention to American strategic and tactical doctrine in WWII, tracing its consistent and logical evolution from the early 1800's. He also compares American strategy, tactics, and doctrine with those of the British and Germans. The first quarter of the book deals specifically with Normandy, and it contains a lot of interesting information about the campaign that does not seem to have been published anywhere else.

<u>Faint</u> <u>Praise:</u> <u>American</u> <u>Tanks</u> <u>and</u> <u>Tank</u> <u>Destroyers</u> <u>During</u> <u>World</u> <u>War</u> <u>II</u>, by Baily, 1983, and <u>Seek,</u> <u>Strike,</u> <u>and</u> <u>Destroy:</u> <u>U.S.</u> <u>Army</u> <u>Tank</u> <u>Destroyer</u> <u>Doctrine</u> <u>in</u> <u>World</u> <u>War</u> <u>II</u>, by Gabel, 1985. If you've ever wondered why American tanks were inferior to their German counterparts, these two books explain everything. Basically, it boils down to unrealistic ideas and incorrect conclusions that the U.S. Army drew from poor technical intelligence on the early–war German victories, which led to the establishment of a set of fundamentally flawed doctrines. Believe it or not, American tanks were *deliberately* designed and intended to oppose *unarmored targets only*, *not* to trade blows with German tanks. Official American doctrine called for German tanks to be left to the tank destroyers, which *were also not designed* for frontal combat against enemy tanks. The tank destroyers were supposed to use their superior speed and maneuverability to ambush and counterattack German tanks from their flanks. While American tank destroyers did have better guns than American tanks, they were only somewhat more maneuverable and had considerably less armor. Thus neither was a match for the Germans in the real world, where it was usually impossible to avoid a toe–to–toe slugfest with the panzers. In short, American armored doctrine did not survive the acid test of combat, the quality of American armored vehicles was only barely adequate, and in the end the war was won through numerical, logistical, and air superiority.

<u>First</u> <u>Across</u> <u>the</u> <u>Rhine:</u> <u>The</u> <u>291st</u> <u>Combat</u> <u>Engineer</u> <u>Battalion</u> <u>in</u> <u>France</u>, <u>Belgium,</u> <u>and</u> <u>Germany</u>, by Pergrin, 1989. This is an interesting and very readable first–person account by the commander of the 291st. Chapters 4–8 deal with Normandy. Unfortunately, Pergrin makes numerous simple errors that should have been caught by his ghost–writer, such as identifying the main armament on a captured German Panther tank as an 88–mm gun, and

stating many times that the distance between St. Mere Eglise and Carentan is 30 miles, when in fact a glance at any map shows it is less than 10 miles. Nevertheless, the book does give a good account of the activities of the American combat engineers in the rear areas – chiefly road and bridge maintenance and mine–clearing.

France Reborn: The History of the Liberation, June 1944–May 1945, by Aron, 1964. This book gives a good account of the activities of the French Resistance in connection with the invasion, as well as the change–over from Vichy to Gaulist civilian government in the newly–liberated areas. Also covered are the internal politics of the various French parties, groups, and factions, and their relations with the British and Americans. The French Resistance movement in Normandy was small and ineffective, and, apart from providing some limited intelligence information to the Allies, it played an insignificant role in the campaign. This was because Normandy had remained reasonably prosperous, and therefore content, under German occupation and Vichy civil administration, and this in turn led to a weak local Resistance movement. The opposite was the case in the nearby province of Brittany, however, which had always been a hot–bed of Resistance activity, dating all the way back to 1940.

German Armour in the Channel Islands, 1941–1945, by Bryans and Ginns, (no date). This book is a very complete and detailed history, with many photographs, of every aspect of the 213th Panzer Battalion, which was equipped with captured French Char B tanks and was located on the Channel Islands from 1942 to 1945.

German Fortifications in Jersey, by Ginns and Bryans, 1978. This is a very complete and detailed accounting of all known German weapons and defensive positions located and constructed on the British Channel Island of Jersey. It also includes much additional information on the German 319th Infantry Division, which composed the bulk of the Channel Islands garrison.

G.I.: The American Soldier in WWII, by Kennett, 1989. This is a very readable and interesting description of the psychology, sociology, and personal and daily lives of the U.S. Army men in WWII.

The Glider War, by Mrazek, 1975. This book contains a lot of detailed information, apparently available nowhere else, on the American glider troops, glider units, and their operations in Normandy and elsewhere.

Grenades and Mortars, by Hogg, 1974. This book has some interesting information on the mortars used by both sides in Normandy.

The Guns 1939–45, by Hogg, 1970. This is a reasonably complete technical history and operational evaluation of each country's artillery equipment during WWII.

Hitler's Fortress Cherbourg, by Breuer, 1984. This is a fast–paced and very readable popular account of the landing at Utah Beach and subsequent operations in the Cotentin Peninsula, up to and including the capture of Cherbourg. Although it is much more anecdotal in nature than the scholarly official histories, with a lot of short and colorful quotes that make it read like a novel, it is well–written and well–researched, and it does an excellent job of setting the mood.

An Introduction to Climate, by Trewartha, 1968. This book contains a lot of information on the average weather conditions in Western Europe.

The Invasion of France and Germany, 1944–1945, by Morison, 1975. This is Volume 11 of Morison's definitive History of U.S. Naval Operations in WWII. Approximately two–thirds of the book is devoted to Normandy. Extremely complete and well–written, it contains essential information on shore bombardment and naval gunfire support, German naval operations, the effects of the great storm, and repair operations at the demolished port of Cherbourg.

Invasion – They're Coming!, by Carell, 1973 (numerous previous and subsequent editions). This book is a *very* popularized account of the campaign for Normandy, as seen through German eyes. It was originally written and published in Germany in 1960, and the first of many English editions appeared soon after that. Although the author is quite a sensationalist, the obvious historical drama of the subject matter helps to pardon his exclamation–point style, and the book can be rather riveting to read. However, caution must be exercised by those who wish to use this book as a serious historical reference: it does contain errors, especially with regard to unit identifications on both sides. Still, it is one of the few books available in English that focus on the German experience in Normandy, and that makes it worthy of at least some attention.

Jackboot: The Story of the German Soldier, by Laffin, 1965 (reprinted 1989). This book begins in 1713 with the army built by King Frederick William of Prussia (Frederick the Great's father), and ends with the defeat of Germany in 1945. Only the last quarter of the book is devoted to the

German soldier of WWII. Nevertheless, the first part of the book provides interesting and relevant background reading, for the legendary performance of the German soldier of WWII was not an accident and did not occur in a vacuum; it was the product of some 250 years of military and national history. This book does a good job of explaining *why* the German Army of WWII was able to do what it did. However, the author is on less firm ground when he argues, in the end, that traditional German militarism is still alive and well but carefully disguised, and that a resurgent Germany will eventually and inevitably return to its aggressive, expansionist ways. I have been to Germany and lived with Germans, and I don't believe it.

<u>Jersey</u> <u>Besieged</u>, <u>1944</u>, by Bryans and Ginns, 1980. This book, published by the Channel Islands Occupation Society, is a collection of photographs, most with long and informative captions, of various aspects of the German occupation, with emphasis on German defensive weapons and positions.

<u>Logistical</u> <u>Support</u> <u>of</u> <u>the</u> <u>Armies</u>, <u>Volumes</u> <u>I</u> <u>and</u> <u>II</u>, by Ruppenthal, 1953 and 1959. These two volumes of the Official U.S. Army History of WWII contain a priceless wealth of hard information on U.S. Army supply requirements, plans, problems, and capabilities, together with complete tonnage data. They are the definitive account of how the U.S. Army in Western Europe was supplied in 1944–45.

<u>Military</u> <u>Effectiveness</u>, <u>Volume</u> <u>III:</u> <u>The</u> <u>Second</u> <u>World</u> <u>War</u>, edited by Millett and Murray, 1988. This is a very informative and scholarly collection of professional research papers that describe and analyze the strengths, weaknesses, and overall effectiveness of the armed forces of each of the major combatants of WWII. Chapter 2 deals specifically with the American Armed Forces, Chapter 5 with the German Wehrmacht, and Chapters 8, 9, and 10 compare and contrast the various nation's armed forces and draw some general conclusions. The consensus of the authors and editors is that the German Wehrmacht reigned supreme at the tactical and operational levels, but failed disasterously at the strategic and political levels. They regard the record of the American Armed Forces as mixed, also – but in a different way; with both good and bad at each of the four levels analyzed. However, it was at the strategic and political levels that American dominance primarily asserted itself, thus leading to ultimate victory.

<u>Mirus:</u> <u>The</u> <u>Making</u> <u>of</u> <u>a</u> <u>Battery</u>, by Partridge and Walbridge, 1983. This is a complete and very detailed history of the German coastal artillery units located on the British Channel Islands in WWII, with emphasis on the largest of the batteries, code–named "Mirus".

<u>Mission</u> <u>Accomplished</u>, by the U.S. VII Corps Historical Staff, 1945. This is a very generalized, send–one–home–to–the– folks commemorative book published for the men of the VII Corps in occupied Germany in the latter half of 1945. Besides general interest, its chief value lies in the *very* detailed listing of *all* the independent sub–divisional units that were ever attached to the VII Corps, including artillery, anti–aircraft, and engineers, plus an amazing host of rear–area, non–combat units such as army bands, postal and paymaster units, shoe repair detachments, fumigation and bath companies, etc.

<u>The</u> <u>Narrow</u> <u>Margin</u>, by Wood and Dempster, 1961, and <u>Battle</u> <u>Over</u> <u>Britain</u>, by Mason, 1969. These two books are about the Battle of Britain in 1940, but they contain detailed day–by–day weather data for the English Channel during an average summer. Utah Beach uses this 1940 data for the "More Clear Weather" option.

<u>Normandy</u> <u>Bridgehead</u>, by Essame, 1970. This is a very well– illustrated, clear, concise, and useful summary of the entire campaign in Normandy, beginning on June 7th. The events of D–Day are not covered. The author was a British brigade commander in Normandy, so naturally the majority of the book is devoted to the British part of the operation. Although brief, his account and analysis of American operations in Normandy is quite good.

<u>The</u> <u>Normandy</u> <u>Campaign</u>, by Patrick, 1986. This is a well– illustrated overview of the Battle for Normandy. Numerous informative sidebars, in the style of <u>Strategy</u> <u>and</u> <u>Tactics</u> magazine, highlight important aspects of the campaign. Unfortunately, this clearly–written and often insightful book is marred by numerous errors in the photo captions and in the identification of various German units.

<u>Numbers</u>, <u>Predictions</u>, <u>and</u> <u>War</u>, by Dupuy, 1979. This excellent book presents a detailed and very comprehensive mathematical model of ground combat, with emphasis on the latter half of WWII in Europe. The author makes a very convincing case for the validity of the model, which he has used to successfully "predict" the outcome of over 150 historical battles since 1805. Although Utah Beach does not make use of this model, as most of the game was designed before the book was consulted, we were delighted

to discover that there is very good agreement between our game algorithms and the data and conclusions given in the book.

On To Berlin, by Gavin, 1979. This is an interesting and well–written first–person account by the Assistant Commander of the 82nd Airborne Division. One chapter pertains to Normandy, and it contains the best available description of the original American airborne plan, which was changed just before D–Day.

Operation Neptune, by Schofield, 1974. This book describes, in brief but reasonably complete fashion, all the various naval aspects of the invasion and subsequent battle for Normandy. The author was one of the British naval commanders during the operation.

Options of Command, by Dupuy, 1984. This book is an interesting and easy–to–read investigation of ten famous "might–have–beens" from WWII, one of which is the invasion of Normandy. What if the Germans had made better use of the resources that they actually had in France in 1944? What if Rommel had been given more authority to organize and deploy all German forces in France as he saw fit? What if significant numbers of German jet aircraft had been committed just a few months earlier than they were historically, and had been able to participate in early, all–out operations against the landing beaches on June 6th and 7th? Had these things happened, and they very easily could have, the result might well have been a disaster for the Allies, causing WWII to extend into 1946 or beyond.

Order of Battle, U.S. Army, World War II, by Stanton, 1984. This massive book is an indispensible research tool for serious military historians. It contains detailed information on *every* U.S. Army combat and engineer unit of WWII, divisional and sub–divisional, from the 1st Armored Division through the 977th Anti–Aircraft Battalion to the 7057th (Italian) Engineer Battalion, including equipment, dates of arrival/departure, combat histories, campaign honors, and some attachment data. The *only* criticism I can make of this fabulous book is that it does not provide complete attachment data for most of the independent, non–divisional units.

Out Of The Blue: U.S. Army Airborne Operations in WWII, by Huston, 1981. The emphasis of this book is the "big picture" of manpower, doctrine, equipment, training, resupply, command, and high–level battle plans, rather than detailed tactical accounts. Only the first part of Chapter 7 deals specifically with Normandy, although

much of the rest of the book contains relevant background information.

Overlord, by Hastings, 1984. This is by far the best and most interesting general work available on the Battle for Normandy. It is very well–researched and carefully documented, and yet remains highly readable. If you're going to read just *one* book about Normandy, this should be it. It is "revisionist" in the sense that it challenges a lot of traditional ideas about the campaign, and it has been described as "controversial". The author's central thesis is that the German Wehrmacht stood without equal as the toughest, most highly skilled, most effective, and most thoroughly professional army of WWII; that in the summer of 1944 it was still, man–for–man, by far the best army in the world; and that its defeat in Normandy was accomplished *only* by the combination of overwhelming Allied numerical superiority and Hitler's incredible stupidity. This is strong stuff, quite at variance with most of what has come out of Hollywood in the last 50 years. The book also reveals many little–known facts and inside stories about the campaign's major events and personalities, which are not included in the official histories or more traditional accounts.

Panzers in Normandy, Then and Now, by Lefevre, 1983. This fascinating and profusely illustrated book is a complete technical and operational history of *all* the German Panzer regiments and battalions that served in Normandy, including the obscure 100th and 206th Panzer Battalions, which fought in the Utah area and were equipped with obsolete French tanks.

Paratrooper!, by Devlin, 1979. This interesting and well–written book is a complete history of the American airborne forces in WWII. One chapter is devoted to Normandy.

A Pictorial History of the U.S. Army, by Gurney, 1966. This very large and profusely illustrated book contains dozens of very interesting photographs taken in Normandy. There is considerable coverage of rear–area bridging, maintenance, supply, and construction activities, and many of the photo captions are specific enough to locate on a map the exact place the photo was taken.

Pictorial Record, The War Against Germany: Europe and Adjacent Areas, by the Office of the Chief of Military History, U.S. Army, 1951 (reprinted 1969). Approximately the first one–third of this book documents the American build–up in England, the D–Day assault, and subsequent operations in Normandy. The primary value of this book to us in designing Utah Beach was the excellent aerial

photographs of some of the cities in the game, especially Carentan and Cherbourg.

Prelude to Overlord, by Wynn and Young, 1983. This book is a useful account of the Allied air operations that preceded the invasion. It includes complete and detailed air orders–of–battle for both sides on D–Day.

The Procurement and Training of Ground Combat Troops, by Palmer, Wiley, and Keast, 1948. Another of the numerous Official U.S. Army Histories of WWII; this volume contains a complete and detailed history of the U.S. Army replacement system.

Rendezvous With Destiny, by Rapport and Northwood, 1948 (reprinted 1965). This large book is the Official History of the American 101st Airborne Division. It contains a very lengthy and detailed account of the Division's service in Normandy.

The Rise and Fall of the German Air Force 1933–1945, edited by Tantum and Hoffschmidt, 1969; German Air Force Bombers of World War Two, Volumes 1 and 2, by Alfred Price, 1968 and 1969; Hitler's Luftwaffe, by Wood and Gunston, (no date); Warplanes of the Third Reich, by William Green, 1976; Junkers Bombers, Volume I (Warbirds Illustrated #43), by Griehl, 1987; Luftwaffe, by Murray, 1985; German Air Force Airlift Operations, by Morzik, 1968; and Luftwaffe Fighter Units, Europe 1942–45 (Osprey Airwar #24), by Shores, 1979. These books were used to compile the necessary data on the Luftwaffe for Utah Beach. "What Luftwaffe?" is not too far from the mark, at least under the historical "Total Allied" Air Superiority Option. Actually, the Germans did average 100–200 bomber sorties per night against Allied shipping and the beaches, about one–quarter of which was in the Utah area, but Allied anti–aircraft fire forced the German bombers to operate from higher altitudes and kept their results to a minimum. Due to the overwhelming Allied air superiority (nearly 15,000 Allied sorties on June 6th alone!), almost all Luftwaffe commanders considered daylight operations over Normandy to be suicidal. Different Air Superiority Options may be selected at the beginning of each game to investigate the effects of reduced Allied air superiority.

Rommel in Normandy, by Ruge, 1979. This is a very interesting and well–written first–person account by the German naval officer who served on Rommel's staff for most of 1944. It contains some useful information on German deployments and defensive measures, as well as informed speculation on what might have happened in the

aftermath of the July 20 attempt on Hitler's life if Rommel himself had not been seriously wounded just three days earlier.

Six Armies in Normandy, by Keegan, 1983. This is an excellent and very readable general–interest account of the campaign in Normandy. It begins with the planning of the invasion and continues through to the liberation of Paris, by successively focusing on one unit from each of the major nationalities that participated. The author's purpose is to impart some understanding of the unique personality, character, and experiences of each of these nationalities, while tying the various threads together into a unified whole, and he succeeds admirably.

Storming Eagles: German Airborne Forces in World War II, by Lucas, 1988. Chapter 16 of this tantalizing (but also frustrating and disorganized) book deals with the German airborne units in Normandy and Brittany. Unfortunately, the author leaves out or only hints at a lot of important information that he obviously had access to, but chose not to share. This was probably a deliberate attempt to make the book smaller and less scholarly, and thus improve its popular sales. The serious reader should beware of numerous errors; there is frequent confusion between the Brittany and Cotentin Peninsulas, for example.

Strike From the Sky: The History of Battlefield Air Attack, 1911–1945, by Hallion, 1989. Chapter 14 of this excellent and informative book analyzes Allied ground support operations in Western Europe during the last year of the war, with emphasis on Normandy.

The Struggle for Europe, by Wilmot, 1963. This is an excellent general history of the ground war in Western Europe, with emphasis on Normandy. The author is obviously a great admirer of British Field Marshal Montgomery, and in fact the entire book is written from the British perspective, which is not surprising since Wilmot is an Australian military historian and the book was originally published in England. Although this book was one of the first full–length studies of the campaign to be published (the first edition came out in 1952), it remains an excellent, if traditional, summary and overview.

Supplying War: Logistics from Wallenstein to Patton, by van Creveld, 1980. Chapter 7 is an interesting analysis of the logistics of the Normandy invasion and subsequent Allied operations on the Continent. Van Crefeld's thesis, apparently correct, is that the Allied logisticians were too conservative in all their assumptions and projections.

<u>Ultra</u> <u>in</u> <u>the</u> <u>West</u>: <u>The</u> <u>Normandy</u> <u>Campaign</u> <u>of</u> <u>1944–45</u>, by Bennett, 1980. One of the best–kept secrets of WWII was the fact that, from mid–1940 on, the British were intercepting and immediately decoding virtually *all* of the top–secret German radio traffic that passed back and forth between German units and their higher headquarters. Just between January 1944 and May 1945, over 200,000 German military radio messages were intercepted, decoded, translated, and analyzed. Scrupulous security on the part of the Allies kept the Germans from ever suspecting that their top–secret radio communications network was completely compromised. The extent of this operation, and its influence upon Allied conduct of the war, was so secret that it was not widely known until the early 1970's, and was not *officially* admitted by the British Government until 1977. Because of "Ultra" (the code name for intelligence information derived from these radio intercepts), the senior American and British commanders frequently knew *exactly* what the opposing German commanders were planning to do, as well as numerous details about the strengths, weaknesses, supply situations, locations, and orders of many German combat units. The author of this book was one of the British officers in charge of intercepting and decoding the German radio traffic, and he has written an excellent account of how it was all done, how the information was used, and the effect it had upon the decisions made by the Allied commanders. The author also shows how "Ultra" did not win the war by itself and did not reveal *everything* about the Germans; only messages sent by long–range radio could be intercepted, and the value of the information sometimes depended upon exactly how it was interpreted. However, there can be no doubt that "Ultra" constituted one more rather large nail in the coffin of the Third Reich.

<u>Uniforms</u>, <u>Organization,</u> <u>and</u> <u>History</u> <u>of</u> <u>the</u> <u>Waffen–SS</u>, <u>Volume</u> <u>4</u>, by Bender and Taylor, 1975. The chapter on the 17th SS Panzergrenadier Division contains some useful information on the unit's service in Normandy.

<u>Unit</u> <u>Organizations</u> <u>of</u> <u>World</u> <u>War</u> <u>II</u>, by Myers, 1977. This book contains generic TO&E data for many of the different kinds of German and American units that fought in Normandy.

<u>U.S.A.A.F.</u> <u>Medium</u> <u>Bomber</u> <u>Units</u>, <u>ETO</u> <u>and</u> <u>MTO</u> <u>1942–45</u> <u>(Aircam/Airwar #7)</u>, and <u>U.S.A.A.F.</u> <u>Fighter</u> <u>Units</u>, <u>Europe</u> <u>1942–45</u> <u>(Aircam/Airwar #8)</u>, both by Francillon, 1977. These books contain useful technical data on the

American aircraft, as well as orders of battle and brief histories of each unit.

<u>U.S.</u> <u>Airborne</u> <u>Forces</u> <u>of</u> <u>WWII</u> <u>(Uniforms</u> <u>Illustrated</u> <u>#18)</u>, by Laughlin, 1987. This is a good photographic history of American Airborne Forces in WWII. The lengthy captions include a lot of interesting information.

<u>U.S.</u> <u>Army</u> <u>Handbook</u> <u>1939–1945</u>, by Forty, 1980. This book has all kinds of useful information on the U.S. Army in WWII, especially on TO&E's, supply tonnages and requirements, and engineer units.

<u>U.S.</u> <u>Army</u> <u>Order</u> <u>of</u> <u>Battle</u>, <u>European</u> <u>Theater</u> <u>of</u> <u>Operations</u>, <u>1943–1945</u>, edited by Madej, 1983. This book is a tabulation of numerous U.S. Army order–of–battle documents and unit records dating from the end of WWII. It proved useful in tracking down some of the independent American corps–level units (artillery, engineer, and anti–aircraft battalions) that served in the Utah area.

<u>U.S.</u> <u>Destroyer</u> <u>Operations</u> <u>in</u> <u>WWII</u>, by Roscoe, 1953. This massive book contains a chapter with detailed information on American destroyer operations off Utah Beach.

<u>The</u> <u>USS</u> <u>Texas</u>, by Egan, Lott, and Sumerall, 1976. This book contains useful technical information on the Texas.

<u>Utah</u> <u>Beach</u> <u>to</u> <u>Cherbourg</u>, by Ruppenthal, 1947 (reprinted 1984). This is the official, complete and definitive account of U.S. Army operations in the Cotentin Peninsula in June 1944. Most of the research for this excellent book was done "on the scene", during and immediately after the events being described, by the author in his capacity as an official U.S. Army historian. More detailed than <u>Cross–Channel</u> <u>Attack</u> (see above), this book contains numerous photographs, many of them aerial photos, that show the actual "lay of the land", plus a large number of detailed topographic battle maps, many of them more detailed than those in <u>Cross–Channel</u> <u>Attack</u>. The information given on German units is also quite accurate, and very impressive for an immediate–postwar publication; the author obviously had full access to all VII Corps Intelligence records, captured documents, and German prisoner interviews.

<u>Victory</u> <u>in</u> <u>the</u> <u>West</u>, <u>Volume</u> <u>I:</u> <u>The</u> <u>Battle</u> <u>of</u> <u>Normandy</u>, by Ellis, 1962 (reprinted with corrections, 1974). This large and excellent book is one of the British Official Histories of WWII. It includes some of the most detailed, accurate and beautiful topographic battle maps ever published. The book's emphasis is, of course, on the British units, but the Americans are not ignored, and the book also devotes

considerable attention to air and naval operations, and to the situation as seen from the German side.

Velikiye Luki

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Utah Beach

"Atlantic Wall", by Fowler, in <u>War</u> <u>Monthly</u> <u>#53</u>, 1978. This article provides somewhat more detail on the types and construction of beach defenses than the article by Williams in <u>World</u> <u>War</u> <u>II</u> magazine (see below).

"Barrier Against Any Invasion", by Williams, in <u>World</u> <u>War</u> <u>II</u>, Sept. 1986. This article gives a good overview of the defenses along the Atlantic Wall, with emphasis on Omaha and Utah beaches.

"Enthroning the King: Artillery and the Twentieth Century Wargame", by Owen, in <u>Strategy</u> <u>and</u> <u>Tactics</u> <u>#135</u>, 1990. This informative article describes the different artillery doctrines and procedures that were used by the major combatants of WWII. Not every army did it the same way. Furthermore, artillery pieces are no different than any other weapons: *how* they are used is usually more

important than the specific characteristics of the weapons themselves.

"The King of Battle: Artillery in the PanzerBlitz Series", by Schwamberger, in <u>The</u> <u>Avalon</u> <u>Hill</u> <u>General</u>, <u>Vol.</u> <u>25</u> <u>#3</u>, 1989. This is another good article about what WWII artillery could and couldn't do, and what the differences were between the major European combatants.

"Nebelwerfer", by Hogg, in <u>War</u> <u>Monthly</u> <u>#30</u>, 1976. This is a useful technical and operational history of the famous German rocket mortars.

"The Organization of the U.S. Army in Europe, 1944–1945", by Ferraiolo, in <u>Strategy</u> <u>and</u> <u>Tactics</u> <u>#30</u>, 1971. This article gives a good general overview of the U.S. Army in Western Europe during the last year of the war.

"Overlord: The Normandy Invasion", by Nofi, in <u>Strategy</u> <u>and</u> <u>Tactics</u> <u>Special</u> <u>Edition</u> <u>#3</u>, 1984. This article gives a general overview of the invasion and subsequent events, up to the capture of Cherbourg. However, it includes little of value to anyone who has access to other sources. Most of what passes for historical analysis in this article is shallow, dated, and/or flawed; there are numerous errors and over–simplifications in the data tables; and the relative combat strengths listed for the units are wrong.

"Sleep Loss and the Continuous Battle", by Smith, in <u>Strategy</u> <u>and</u> <u>Tactics</u> <u>#80</u>, 1980. This article summarizes the results of actual combat experience, as well as recent medical tests conducted on military units during training exercises, with regard to the effects of sleep loss and fatigue on combat operations. The fatigue system in Utah Beach is based on this information.

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<u>Advanced</u> <u>Squad</u> <u>Leader</u>, by the Avalon Hill Game Company, 1985 (with numerous subsequent additions). <u>Advanced</u> <u>Squad</u> <u>Leader</u> (or ASL) is a revision and expansion of an earlier Avalon Hill wargame called <u>Squad</u> <u>Leader</u>. ASL is a very detailed, complete, and realistic tactical–level wargame system that covers every aspect of WWII ground combat. The armor and antitank strengths of the armored, antitank, and anti–aircraft units in Utah Beach are based on the armor and penetration values given in ASL. Like many sets of rules for wargaming with armor miniatures, ASL contains a vast amount of data on vehicles, guns, armor thicknesses, etc. The difference between ASL and most sets of rules for armor miniatures is that the designers of ASL have done a much better job of integrating all that data and applying it to real–world situations, as opposed to the theoretical exercise in long–range target shooting that you get with most miniatures rules. The ASL designers have also done an excellent job of analyzing the data, summarizing it, and presenting it in a manner that makes it much easier to compare the strengths and weaknesses of various vehicles and guns *as they actually performed*, instead of their theoretical, proving–ground characteristics.

<u>Atlantic</u> <u>Wall</u>, by Simulations Publications, Inc., 1978. <u>Atlantic</u> <u>Wall</u> is a brilliantly–inspired but poorly–executed operational–level simulation of the first month in Normandy. Like most of SPI's larger games, it features an excellent basic design coupled with incomplete research and incomplete and inadequate playtesting. (SPI, now out of business, was infamous for its extensive use of loud and unskilled juveniles as playtesters.) In spite of the fact that the large game map is very appealing visually, much of the terrain depicted is wrong. In addition, the terrain restrictions on movement and combat are all too lenient, and, as a result, Allied movement and combat operations are *far* too mobile. Although two pages of official errata for the game were later published, most of the errata actually makes things worse rather than better. The biggest problem with the game and errata as published is that there is no way for the Germans to establish and hold any of their historical defensive lines for as long as they did in reality; major rules changes are required just in

order to give the German player any hope of achieving the *historical* result, much less any measure of victory.

<u>The</u> <u>Longest</u> <u>Day</u>, by the Avalon Hill Game Company, 1980. Similiar to <u>Atlantic</u> <u>Wall</u> in size and scope, <u>The</u> <u>Longest</u> <u>Day</u> is a large, operational–level simulation of the entire campaign in Normandy. At first glance, <u>The</u> <u>Longest</u> <u>Day</u> seems impressive and definitive, but, like <u>Atlantic</u> <u>Wall</u>, problems appear upon closer examination. Although the historical research on the German order of battle is superb, the relatively much easier to research Allied order of battle is marred by numerous errors, unnecessary over–simplifications, and questionable design decisions. Documents and sources are listed in the extensive bibliography, and discussed explicitly in the excellent footnotes, that *should* have had a strong influence on the Allied orders of battle and unit strengths, but none of that information made it on to the unit counters. Did the designer run out of time here, or just lose interest in working on the American and British OB's? Worse, the game rules contain incentives for the players to do some very non–historical things. Just one example of this is a rule that encourages the mixing of units from two different divisions in an attack, in order to avoid expending supply for either division. Finally, one of the stranger and more inexplicable aspects of this game is the use, on the unit counters of *both* sides, of *German* WWII–era military symbols, rather than the standard American symbols that are used by virtually all other wargames. The designer insists that the German symbols serve to better distinguish the different types of units and their game effects, but that is simply not true. The standard American military symbols, or slight modifications to them, would have served just as well, and would have been far less confusing to everyone. One is tempted to suspect that the designer merely rationalized his own preference in the matter.

Glossary, Pronunciation Guide and Abbreviations

ANG: an abbreviation of "Angers"; the German unit which carries this designation was the "Alarm Battalion" of the German Army Engineer School at Angers, France.

Angers \aw–<u>zhay</u>\: a city in west–central France.

Atlantic Wall: the belt of German coastal fortifications that theoretically extended from Norway to Spain, but were of significant strength only in the Normandy and Calais areas of France, in the immediate vicinity of major ports, and on the German–occupied British Channel Islands.

BAR: an abbreviation of "Barfleur", and the name of two German coastal artillery batteries located near the town of that name.

Barfleur \ba–<u>flu</u>–oor\: a minor port at the northeast tip of the Cotentin Peninsula.

BB: the standard military abbreviation for battleship.

Bocage \<u>bak</u>–azh\: the French word for the typical Normandy terrain, which consisted of huge numbers of small fields, each enclosed by thick and impenetrable hedgerows.

Briquebec \<u>breek</u>–bek\: a city on the western side of the Cotentin Peninsula.

BRO: an abbreviation of "Bromm", which was the name of several German coastal artillery batteries located to the east of Cherbourg.

CA: the standard military abbreviation for heavy cruiser.

Carentan \<u>kar</u>–roon–tah\: a city near the eastern base of the Cotentin Peninsula.

Carteret \<u>ka</u>–tear–aye\: a city on the west coast of the Cotentin Peninsula.

CHER: an abbreviation of "Cherbourg".

Cherbourg \<u>share</u>–boo–er\: the largest port city in Normandy.

CHR: an abbreviation of "Cherbourg".

CL: the standard military abbreviation for light cruiser.

Cotentin \ka–taw–<u>tih</u>\: the name of the peninsula that extends northward from Normandy into the English Channel.

Coutances \<u>koo</u>–taw\: a city near the west coast of the Cotentin Peninsula.

DD: the standard military abbreviation for destroyer.

Fallschirmjager \<u>fall</u>–sherm–yae–ger\: the German word for "airborne" or "paratrooper".

FJ: an abbreviation of "Fallschirmjager".

FJA: an abbreviation of "Fallschirmjager Ausbildung", which is German for "Airborne Training".

Flak: an abbreviation of the German word "fliegerabwehrkanone", which means "anti–aircraft gun".

Fliegerabwehrkanone \<u>flee</u>–ger–<u>ab</u>–ver–<u>kan</u>–on\: the German word for "anti–aircraft gun", usually abbreviated as "flak".

HA: an abbreviation of "Hamburg", which was the name of two German coastal artillery batteries east of Cherbourg.

Heer \here\: the German word for "army".

HQ: a common abbreviation of "Headquarters".

Interdiction: the military tactic of attacking the enemy's rear areas and supply lines, instead of his front–line positions.

Isigny \easy–<u>knee</u>\: a city near the eastern base of the Cotentin Peninsula.

Kampfgruppe \<u>kampf</u>–group–ah\: the German word for "battlegroup", meaning a temporary command consisting of miscellaneous smaller units, often abbreviated as "KG".

KM: an abbreviation of "Kriegsmarine"; the German unit that carries this designation was a naval infantry battalion.

Kriegsmarine \<u>kreegs</u>–marine\: the German word for "navy".

La Haye du Puits \la eye du pwee\: a city near the west coast of the Cotentin Peninsula.

LAN: an abbreviation of "Landemer", which was the name of a German coastal artillery battery located to the west of Cherbourg.

Lessay \less–<u>say</u>\: a city on the west coast of the Cotentin Peninsula.

Luftwaffe \<u>luft</u>–vaf–ah\: the German word for "air force".

MAR: an abbreviation of "Marcouf", which was the name of a German coastal artillery battery near the east coast of the Cotentin Peninsula.

MN: an occasionally–used military abbreviation for monitor.

Montebourg \mont–<u>oor</u>\: a city near the east coast of the Cotentin Peninsula.

Nebelwerfer \<u>neb</u>–el–verf–er\ the German term for short–range rocket artillery.

Ost \ahst\: the German word for "east", also used to designate German military units that were composed of non–German volunteers from eastern Europe.

Panzer \<u>pan</u>–zer\: the German word for "tank" or "armor".

Panzergrenadier \<u>pan</u>–zer–gren–a–deer\: the German word for "armored infantry".

Periers \pear–ee–<u>aye</u>\: a city near the base of the Cotentin Peninsula.

Quettehou \<u>kett</u>–ooh\: a city near the east coast of the Cotentin Peninsula.

SB: an abbreviation for "Sturm Battalion", which is German for "Assault Battalion".

Sortie \<u>sort</u>–ee\: one mission flown by one aircraft; ten sorties could be either ten aircraft flying one mission each, or one aircraft flying ten missions.

SS \ess–ess\: an abbreviation of the German word "SchutzStaffel"; the SS was a very large and diverse organization

which was involved in some way in almost every aspect of the German government, economy and war effort. The "Waffen–SS" was the front–line combat branch of the SS.

St. Lo \sahnt low\: a city located in north–central Normandy.

St. Mere Eglise \sahnt mare <u>ee</u>–glees\: a city located near the east coast of the Cotentin Peninsula.

St. Saveur le Vicompte \sahnt <u>so</u>–voor luh <u>vee</u>–kompt\: a city near the center of the Cotentin Peninsula.

STV: an abbreviation of St. Vaast la Hougue, and the name of a German coastal artillery battery located near that city.

St. Vaast la Hougue \sahnt vahst la oog\: a minor port located on the east coast of the Cotentin Peninsula.

Valognes \val–<u>own</u>–ya\: a city located south of Cherbourg on the Cotentin Peninsula.

Waffen–SS \<u>vaf</u>–fen ess–ess\: the German military organization that was originally intended to be a political armed force under the sole control of the Nazi Party, but which functioned increasingly as the fourth branch of regular German military service the longer the war went on.

Wehrmacht \<u>ver</u>–makt\: the German word for "armed forces".

YO: an abbreviation of "Yorck", which was the name of two German coastal artillery batteries located to the west of Cherbourg.

ZOC: a wargame abbreviation for "zone of control".