

War in the West

Living Manual

V1.01

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1. INSTALLATION

1.1. SYSTEM REQUIREMENTS

1.1.1. MINIMUM SPECS:

OS: Windows XP(SP3)/Vista/7/8

CPU: 1.5GHz+

RAM: 2GB

Video Card: 128MB DirectX 9+ Compatible

Sound Card: 16 bit DirectX 9+ Compatible

Hard Drive Space: 2GB Free

DirectX 9.0c or higher

V1.01.12 – 6 November 2015

Updated game engine to 9c DirectX SDK June2010 (latest available)

1.1.2. RECOMMENDED SPECS:

OS: Windows 7/8 64-bit

CPU: 3GHz+ (or multi-core equivalent)

RAM: 4GB

Video Card: 256MB DirectX 9+ Compatible

Sound Card: 16 bit DirectX 9+ Compatible

Hard Drive Space: 2GB Free

DirectX 9.0c or higher

1.2. INSTALLATION

Please ensure your system meets the minimum requirements listed below. To install the game, either double click on the installation file you downloaded or insert the DVD into your DVD-ROM drive. If you have disabled the autorun function on your DVD-ROM or if you are installing from a digital download, double-click on the installation archive file, then double click on the file that is shown inside the archive. Follow all on-screen prompts to complete installation.

1.3. UNINSTALLING THE GAME

Please use the Add/Remove Programs option from the Windows Control Panel or the Uninstall shortcut in the games Windows START menu folder to uninstall the game. Uninstalling through any other method will not properly uninstall the game.

1.4. PRODUCT UPDATES

In order to maintain our product excellence, Matrix Games releases updates containing new features, enhancements, and corrections to any known issues. All our updates are available free on our website and can also be downloaded quickly and easily by clicking on the Check for Update link in your Game Menu or by using the Update Game shortcut in your Windows START menu folder for the game.

We also periodically make beta (preview) updates and other content available to registered owners. Keeping up with these special updates is made easy and is free by signing up for a Matrix Games Members Club account. When you are signed up, you can then register your Matrix Games products in order to receive access to these game-related materials. Doing so is a simple two step process:

Sign Up for a Matrix Games Members Club account – THIS IS A ONE TIME PROCEDURE; once you have signed up for a Matrix account, you are in the system and will not need to sign up again. Go to www.matrixgames.com and click the Members hyperlink at the top. In the new window, select Register NOW and follow the on-screen instructions. When you're finished, click the Please Create My New Account button, and a confirmation e-mail will be sent to your specified e-mail account.

Register a New Game Purchase – Once you have signed up for a Matrix Games Member account, you can then register any Matrix Games title you own in your new account. To do so, log in to your account on the Matrix Games website (www.matrixgames.com). Click Register Game near the top to register your new Matrix Games purchase. If you purchased your game while already logged in, it will be automatically registered for you.

We strongly recommend registering your game as it will give you a backup location for your serial number should you lose it in the future. Once you've registered your game, when you log in to the Members section you can view your list of registered titles by clicking My Games. Each game title is a hyperlink that will take you to an information page on the game (including all the latest news on that title). Also on this list is a Downloads hyperlink that takes you to a page that has all the latest public and registered downloads, including patches, for that particular title.

You can also access patches and updates via our Games Section (<http://www.matrixgames.com/games/>), once there select the game you wish to check updates for, then click the Downloads link at the top of the game page. Certain value content and additional downloads will be restricted to Members Club members. so it is always worthwhile to sign up there.

Remember, once you have signed up for a Matrix Games Members Club account, you do not have to sign up again at that point you are free to register for any Matrix Games product you purchase.

Thank you and enjoy your game!

1.5. GAME FORUMS

Our forums are one of the best things about Matrix Games. Every game has its own forum with our designers, developers and the gamers playing the game. If you are experiencing a problem, have a question or just an idea on how to make the game better, post a message there. Go to <http://www.matrixgames.com> and click on the Forums hyperlink.

1.6. NEED HELP?

The best way to contact us if you are having a problem with one of our games is through our Help Desk. Our Help Desk has FAQs as well as a dedicated support staff that answer questions within 24 hours, Monday through Friday. Support questions sent in on Saturday and Sunday may wait 48 hours for a reply. You can get to our Help Desk by going to <http://www.matrixgames.com/helpdesk>.

2. INTRODUCTION

2.1. BACKGROUND

On 10 July, 1943, forces of the British 8th Army and the United States 7th Army invaded the island of Sicily from bases in Allied held North Africa. Opened with airborne landings followed by an amphibious assault, Operation Husky was not only a harbinger of Allied strategy based on air and naval power, but the next step in the planned liberation of Western Europe. Over the next two years, the Western Allies, consisting primarily of US and UK forces along with French, Polish and other allied troops would fight Axis forces led by Germany and their Italian and other allies for control of Italy, France, Belgium, Netherlands and Germany itself. Air power was a critical element of the campaign against the Axis, with strategic bombing of factories, population and transportation designed to cripple Axis industry and the delivery of war material, direct support and interdiction against Axis ground forces by tactical Air Forces, and the gaining of air supremacy by Allies fighters against the Axis air forces. Control of the sea lanes by naval and air power ensured the success of numerous amphibious landings on the continent, to include the most famous Operation Overlord, better known as D-Day, the invasion of Normandy in June 1944. By the fall of Berlin to the Soviet Union at the end of World War II, hard fought battles resulted in the surrender of Italy and the liberation of Western Europe with the Western Allies meeting Soviet forces on the Elbe River in Germany.

2.2. THE GAME

Gary Grigsby's War in the West is a turn based simulation of the Western Front in World War Two from July 1943 to August 1945. As the Western Allies or Axis player, you take the role of the military High Command to use the forces available to you to execute the conflict at the strategic and operational levels of war, to include the Allied strategic air campaign. The game is an "Alternate History Creator" that focuses on simulating the logistic and command and control problems that the historical commanders on the Western Front had to deal with. It will allow players to explore many of the strategic and operational "What ifs" that have been discussed by historians and armchair strategists for many years. As such, economic and research based "what ifs" are not the focus. The game scale is weekly turns, with a hexagonal map area representing ten miles per hex. Ground units range from Allied and Axis Divisions down to battalion level support units and air units at the squadron and group level. Units are all controlled through a series of Headquarters units, each with individual leaders, which represent the chain of command up to the High Command (OKW and AFHQ) level. Combat is conducted through an automated tactical system that models the action down to the individual aircraft, Armoured Fighting Vehicle, and infantry squad.

2.3. THE MAIN MANUAL

This manual provides a detailed description of the game's rules, functions and user interface. Cross referencing of applicable

sections has been included in the format (x.xx.x), for example, (14.1.2) refers to section 14.1.2 in the manual. Where appropriate, the formulas underlying the game functions are provided. In some cases, knowledge of specific formulas was deemed to allow overly “gamey” behaviour, or is too complex to detail, so they are kept “under the hood”.

2.4. PLAYERS HANDBOOK AND TUTORIALS

Also included with the game is a PDF file 32 page player's handbook. This is a handy reference with one page guides explaining key elements of the game. It is recommended that players start by reading that handbook before diving into the main manual.

Also included with the game are some video tutorials to help get you started. These can be accessed from the game launcher menu.

3. GETTING STARTED

We recommend players start by watching any video tutorials that are available on the main menu, followed by playing the Operation Husky introductory scenario. After that, follow up with some of the smaller scenarios. It would also be a good idea to play the air campaign introductory scenario prior to starting a campaign game. Players should focus at first on just moving and attacking with their on-map units before exploring other parts of the game. There's so much to learn in terms of both the interface and rules that it could be overwhelming, though much of it is not needed to play the game “out of the box,” but can be absorbed in stages as the player becomes more experienced. Bottom line, players shouldn't feel they need to learn everything in order to start playing the game.

3.1. GLOSSARY

Air Directive: General orders given to an Air Force headquarters unit for a type of mission such as ground support or strategic bombing. Players can create and/or adjust Air Directives generated by the computer, which then in turn automatically creates missions that are flown during the air execution phase.

Air Mission: The specific flight of a number of air group units to a specific target to conduct a specific mission. Many air missions are generated as a result of the execution of an air directive, however, some air missions are conducted by the computer (i.e. naval air patrol and interception) or manually set by the player (i.e. air transport missions in the movement phase).

Armoured Fighting Vehicle (AFV): Various summary displays refer to AFV's. For game purposes, the AFV designation generally is given to tanks, tank destroyers, and self-propelled guns. The following types are specifically designated as an AFV:

“Light Tank”, “Medium Tank”, “Heavy Tank”, “CS Tank”, “Flame Tank”, “Assault Gun”, “SP Artillery”, “DD Tank”, “MSW Tank”, “Engineer Tank”, “SP Inf-Gun”, “Tank Destroyer”, “Hvy Tank Destroyer”, “Infantry Tank”, “Cavalry Tank”, “Hvy Cavalry Tank”, “Hvy Assault Gun”, “Lt Tank Destroyer”, “HT – CS Howitzer”

Type designation can be found in the Ground element detail window (26.4.20) or the City Production List Window (26.4.4).

Attached Unit: A unit that has been assigned to a headquarters unit, or in the case of support units, directly attached to an eligible combat unit. Unit attachments define the chain of command of units from a High Command level headquarters unit through any intermediate headquarters units down to combat and support units by which command and control (C2) is exercised through the headquarters unit's leaders.

Attrition: Damage and losses to men and equipment not directly caused by player initiated combat. Attrition occurs during the phasing players logistics phase.

Axis: The group of nations, led by Germany, that fought on the Western Front. The Axis side consists mostly of forces from Germany and Italy.

Chain of Command: The hierarchal organization that determines the subordination of one unit to another to allow the flow of orders and support. The chain of command starts with a High Command level headquarters unit and is defined by the attachment of other headquarters, support, combat and air group units to form either a direct link or a series of linked headquarters units by which the leaders in command of the headquarters units exert command and control. The Order of Battle (hotkey o) displays the current chain of command for the phasing player's forces.

Combat Value (CV): Numerical value assigned to a ground unit that is used to determine the results of a battle and represents its ability to take or hold territory, e.g. “boots on the ground.” The unit CV is equal to the sum of the individual CV's for each ground element in the combat or support unit. CV is not a fixed value; it is a calculated value that can only provide players an idea of the combat ability of the unit. Note that the Axis garrison CV is different from normal CVs in that it is fixed for determining garrison requirements and there is no vehicle shortage penalty and no weather penalty when calculating the garrison value of a unit (18.2.1).

Command and Control (C2): The method by which forces are controlled to allow orders and information to flow up and down

the chain of command. In Gary Grigsby's War in the West, C2 is exercised by the leaders in the headquarters units that other units are attached to through the use of leader rating checks.

Command Capacity (CC): A numerical rating, expressed in command points, which delineates the number of combat units that can be attached to a headquarters unit without affecting its performance. If this normal capacity is exceeded, the leader of the headquarters unit will suffer penalties when conducting leader checks.

Command Point (CP): A value assigned to each combat unit based on its size, e.g. regiment, division, corps. Headquarters units have a command capacity expressed in command points that determines the number of combat units that can be attached without affecting the performance of that headquarters unit leader.

Commitment: The process that determines which eligible support units and reserve mode combat units participate in a battle. Reserve mode combat units and support units attached to headquarters units must pass a series of checks to be committed to battle, while support units directly attached to combat units participating in a battle are automatically committed.

Depot: A key part of the logistics system, depots are locations for the storage and transshipment of freight by rail and ships to other depots, or by vehicles (trucks) or foot (animal drawn transport, organic vehicles) to units, to include airbase units. There are four types of depots (20.0) that can be set to five different priorities (0-4). Freight stored at depots is converted to supply stocks or replacements (manpower and equipment) when it is shipped from a depot to a unit.

Device: A specific item of war fighting equipment that is either installed in an aircraft, AFV or combat vehicle for operation by the crew, or that are used by the manpower in all other ground elements. Most devices are weapons, to include bombs, rockets, rifles, machine guns, artillery, AA and AT guns, but devices also include electronic warfare systems and aircraft drop tanks.

Die (x): The computer simulates the roll of a die, with an equal chance to roll a number from one to x.

Equipment: General term for war fighting material that includes aircraft, AFV, combat vehicles and their installed devices as well as all other devices that are part of ground elements.

East Front Box: Term for the off-map location of Axis forces fighting on the Eastern Front in Gary Grigsby's War in the West (23.0).

Factories: Generic term for all items that either produce manpower and materiel for production or supply or provide capacity for strategic movement. Factories are located in town, city and urban hexes and include manpower, ports, railyards, resource production, fuel and oil production, armaments production, vehicle production, heavy industry and individual aircraft, armoured fighting vehicle, and other combat vehicle production.

Fortification Defense Modifier: The total defense modifier to the combat value of defending units, which is a combined value that takes into account both the terrain fortification level and any man made fortification level in the hex (15.3).

Freight: Standard unit all material is converted to for transport through the supply grid (20.1). Measured in tons, freight is a capability that resides in depots starting with national supply sources and is essentially limited only by the availability of rail, sea, and vehicle transport. Material is transported as freight through the rail network or port to port both to and from factories and production pools and to depots for delivery by vehicles and intrinsic transport to units where it is converted to supplies and replacements.

Ground Element: Individual squads, guns, AFV's, or other combat vehicles such as halftracks and armoured cars and associated manpower that are the building blocks of ground units. The type and number of ground elements comprising a ground unit are specified in the Table of Organization and Equipment (TOE) for that unit.

Guns: Devices that are individual ground weapons of 20mm size or greater, with the exception of most mortars. Usually any device that has the word 'gun' in its name, but howitzers, Heavy Mortars (160mm or greater) and Multi-Barrel Rocket Weapons such as the Nebelwerfer are also designated as guns.

Multi-Role Unit: A unit that can switch from being an on-map combat unit to a support unit and vice versa. Many of these are divided into 3 equal parts when they are converted to support unit status.

National Supply Source: A type 4 Depot that acts as an ultimate source of supply. The establishment of a rail network and connection to the supply grid requires the tracing of a contiguous path of rail line hexes, which can include over water from port to port, to a national supply source. See 20.1.2 for a list of national supply sources.

OB: Unit level Order of Battle: Equivalent to TOE (OB). OB's are Tables of Equipment (TOE) that list the notional number and specific type (i.e. Panzer III) of ground elements contained in a ground unit. OB is the term used in the game editor, while TOE (OB) is used for in-game screens and windows.

OOB: Armed Forces level Order of Battle. The OOB screen displays the command and control (C2) structure of each side's forces, starting at the high command level and tracing ground and air unit attachments down to the individual support and air group unit.

Port Capacity: Expressed in tons, this is a measure of a port's transportation capacity. Each undamaged port level (number of port 'factories') generates 15000 tons of port capacity.

Railhead: Any friendly controlled undamaged rail line hex connected to a rail network.

Rail Network: A contiguous path of friendly controlled undamaged rail line hexes connected to a national supply source.

Rail Capacity: Expressed in tons, this is a measure of railroad transportation capacity. Each undamaged railyard level (number of railyard 'factories') generates 5000 tons of railroad transportation capacity.

Random(x): The computer generates a random number from 0 to x-1.

Railroad Repair Value (RRV): A numerical value based on the maximum number of construction support units attached to a railroad repair HQ unit that delineates the maximum number of hexes a railroad repair unit can be from a railhead and still repair damaged rail line hexes.

Railroad Repair Cost (RRC): The cost in movement points for a railroad repair HQ unit to repair a damaged railroad hex.

Reserve Aircraft: An aircraft assigned to an air group unit that is categorized as 'unready' and will not participate in air missions. Reserve aircraft are not counted against the maximum number of aircraft allowed in a particular air group unit.

Select: In interface terms, select means to left click with the mouse on a unit, button or link

Supplies: The type of supply used for food, maintenance and horse fodder. Ammunition, though a separate type of supply, is not produced separately, but is broken out from supplies based on unit need. Also referred to as general supplies.

Supply: The overall term for consumable logistical items required by units to function effectively. There are three types of supply; general supplies, ammunition, and fuel.

Supply Grid: The physical infrastructure used to transport and store supply and production resources. The main part of the supply grid consists of national supply sources connected by a rail network of undamaged rail line hexes and includes stockpiles of supply in city and urban hexes as well as stockpiles in depots for the provision of supply and replacements to units. Ports can also be connected to the supply grid, allowing tracing of supply over water. Units must be able to trace to the supply grid to be in supply. To be in supply, units need to trace to a national supply source hex or to a port that can connect to a port (not through enemy controlled water hexes) that can trace to a national supply source. Support Unit: Single purpose independent battalions, brigades and regiments of various types. With the exception of construction battalions, which can be automatically detached to repair rail lines, support units will not appear on the map, but will be attached to headquarters and certain combat units and will be listed in the detail window of the unit to which they are attached.

Support Squad Ground Element: Ground elements that provide the administrative and logistical backbone required for a unit to operate effectively. Note that, despite the similarity in name, support squads and support units are different entities.

TOE: Tables of Equipment. Lists the number and type of ground elements contained in a ground unit. TOE is used as a general term for all TOE's in the game, whether they are notional or actual, generic or specific. The TOE window displays a prescribed and actual unit TOE with generic types of ground elements (i.e. medium tank)

TOE (OB): Table of Equipment that uses the OB from the game editor, displaying specific types of ground elements (i.e. Sherman VC Firefly).

Unit Box Type: Symbol inside the unit counter graphic displaying the type of unit, such as infantry, armour or artillery. See 26.1.2 (Appendix A).

Vehicle: Generic vehicles, also referred to as trucks, are used by units, supply depots, and the production system to transport ground elements and freight. All vehicles are considered as 2.5 ton equivalents.

Western Allies (WA): The group of nations and units, to include UK, Commonwealth, US, Free French, and Polish, that fought the Axis nations on the Western Front in WWII. Also known as Allies.

3.2. CONTROLS

The game is controlled primarily by the mouse, with for the most part left click being used to select and right click or shift-right click being used to conduct actions (exceptions include use of the shift key to select multiple hexes). The Y or N keys can be used to answer the request for Yes or No acknowledgement that appears in small pop-up windows such as ending a phase, or exiting the scenario or game. In addition, many functions are accessible through the keyboard and some non-critical functions, such as highlighting types of units, are available only through the keyboard. A list of all hotkeys can be displayed by pressing Shift-H while in the game. Details on the game interface and associated controls are located in the rest of this section and in section 5.

3.2.1. HOTKEY LIST

Below is a list of the hotkeys in the game. Note that when an admin or info tab screen (5.1.2) is displayed, all of the hot keys related to the main map area are disabled. This avoids inadvertent selection of functions, such as 'auto-assign unit to nearest headquarters', while the player is utilizing a full screen. The admin and info tab screen hot keys still work and can be used to go from one to the other. For example, the player could display the losses screen (hotkey L) and then switch to the preferences screen (Shift-P) using hot keys without having to go back to the main map area.

- a Automatic Air Directive Creation
- b Build-up/breakdown combat units
- c Show Commander's Report screen

d	Show Air Doctrine screen
e	Toggle enemy hexes on/off
f	Toggle fort levels on/off
g	Auto assign unit(s) to nearest applicable HQ. A text window will notify the player if a successful leader roll has reduced the AP expenditure, to a minimum of 1.
h	Show help locate hex/city/unit/air group unit
i	Show Reinforcement/Withdrawal schedule
j	Selected units to reserve mode (if allowed)
k	Selected units to refit mode
l	Show Losses screen
m	Selected units to ready mode
n	Toggle Logistics Info on/off {n}. When the n key toggled, the supply priority of a depot can be changed by hovering over the hex and pressing "." and "," keys to increase or decrease the depot priority. This is not possible when in F11 mode.
o	Show Order of Battle screen
p	Show Production screen
q	Quick save - (The quick save will save to a.psv file if PBEM is enabled and will save to a .sav file if in a non-PBEM game).
r	Toggle rail damage info on/off - (In addition to rail damage, hexes further than 10 hexes or 25 MP from a railhead are shaded light gray, hexes further than 25 hexes or 100 MP from a railhead are shaded dark grey, enemy hexes are shaded the same color as if toggled, and Rail repair HQ units are bordered in yellow.
s	Toggle soft factor on unit counters
t	Toggle counters on map on/off
u	Undo last move (if selected unit is eligible)
v	Show Victory screen
w	Displays weather conditions screen. Allows player to toggle on ground weather, air weather, weather zones or road system levels on the map by clicking to the left of each of the main text headers for these items. Can also access dominating weather conditions table from the screen.
x	Toggle ground support on/off
y	Toggle unit values display type (numeral/short name)
z	Toggle unit counter info between Attack CV/Movement Points (MP), Attack CV/Defense CV, and Garrison Value/G/MP
Shift-A	Use AI to move/manage friendly air units/bases
Shift-C	Center map on selected hex
Shift-D	Show Air Directive Summary
Shift-E	Show Logistics Phase Event Log
Shift-F	Create fortified unit in selected hex
Shift-G	Show Game Options screen
Shift-H	Show Hotkey list
Shift-I	Toggle Air Directive Execution Detail
Shift-J	Axis Garrison Status Screen
Shift-K	Show Axis garrison requirement in captured cities and urban hexes (Red shading = No Garrison present, Yellow shading = Garrison requirement not fully met, Purple shading = Garrison requirement fully met)
Shift-L	Toggle factory locations on/off
Shift-M	Show Metrics Screen
Shift-N	Toggle daylight/night on/off (for air missions)
Shift-O	Toggle map Flak values on/off. Displays the relative intensity of anti-aircraft (Flak) values. The display cycles between no values, values in cities only, and values in cities and units. Numbers displayed are between 0 and 9 to indicate intensity of flak, with the left number being low/mid (below 20k altitude) and right number being high (above 20K).
Shift-P	Show Preferences screen
Shift-Q	Quit and exit to main menu. Note that this hot key is disabled during AI vs AI continuous play or during the computer AI turn of a human vs computer game.
Shift-R	Toggle Unit Modes/Isolated on/off. The dominant item will be isolated units shown with a red outline. Other items are Purple=reserve mode, Blue=refit mode, White = Static Mode, Orange=Withdraw Mode
Shift-S	Show Save Game screen
Shift-T	Toggle Air Recon values on/off
Shift-U	Toggle Air Interdiction values on/off
Shift-V	Toggle Victory locations on/off - Displays flag that is either red (Western Allies), black (Axis) or 50/50, which indicates both sides consider the hex an objective.
Shift-W	Toggles between showing All weather graphics/Ground Condition only/Air Condition only/no weather graphics.
Shift-X	Exit from continuous play (for AI vs. AI games)

Shift-Y	Show Air Directive targets
Shift-Z	Toggle command links for the selected unit, on the map, graphically with lines. Cycles through three modes – show no links, show links to all subordinates (blue – units, turquoise – HQs) and HHQ (orange), show links to subordinate HQ's (turquoise) and HHQ (orange).
Ctrl-a	Airborne Planning Screen. Displays available airborne force and available air transport. Lists on map airborne combat units, their current TOE percentage and their current load cost (for an airborne drop) as well as their prep status. Also lists available transport total carry capacity (in tons) of ready aircraft.
Ctrl-d	Toggle Combat Delay Values on/off
Ctrl-e	Display East Front Screen
Ctrl-g	Toggle hex grid on/off
Ctrl-i	Toggle Air Execution Phase Detail
Ctrl-j	Toggle Jump map on/off
+	Zoom Map In
-	Zoom Map Out
.	Select next hex with friendly unit
,	Select previous hex with friendly unit
	Note that the above select next/previous hex functions scans from the current selected hex or X1,Y0 if no hex is currently selected, going south and then one row east to the top of the map to find the next hex containing a friendly unit (or north and then west if previous). It then selects all units in the hex as if the player had left-clicked on that hex. If a hex with units off the viewable map area is selected the map will re-center on that hex.
ESC	Exits current display/combat
F1-F12 for Air Planning Phase Mode Toolbar	
F1	No Air Directive Selected/View map mode
F2	Ground Support Air Directive
F3	Ground Attack Air Directive
F4	Strategic Bombing Air Directive
F5	Air Recon Air Directive
F6	Air Superiority Air Directive
F7	Naval Patrol Air Directive
F8	N/A
F9	N/A
F10	Air Transfer Mode
F11	Show Battle Sites Toggles between 3 different states: 1) show all battle sites, 2) show ground battle sites, 3) show air battle sites attacks. Also, the number of battles in each hex is printed as a number in the lower right of the battle site icon.
,	Previous Battle in Hex (when show battle sites (F11) selected)
.	Next Battle in Hex (when show battle sites (F11) selected)
F12	End Air Planning Phase and Execute Air Directives
F1-F12 for Movement Phase Mode Toolbar	
F1	Move Mode
F2	Rail Mode
F3	Naval Transport Mode
F4	Amphibious Transport Mode
F5	N/A
F6	N/A
F7	N/A
F8	N/A
F9	Air Transport Mode. Toggles between Air Transport – Units and Air Transport – Freight. When F9 is first selected, the unit mode will be enabled; and when selected again the freight mode will be enabled, then back to unit mode, etc. Each time F9 mode is selected from another mode (F1, F3, etc.) it will start in unit mode. The current air transport mode is listed in the top toolbar.
F10	Air Transfer Mode
F11	Show Battle Sites – Toggles between 3 different states: 1) show all battle sites, 2) show ground battle sites, 3) show air battle sites attacks. Also, the number of battles in each hex is printed as a number in the lower right of the battle site icon.
,	Previous Battle in Hex (when show battle sites (F11) selected)
.	Next Battle in Hex (when show battle sites (F11) selected)
F12	End this turn
0 ... 7	Combat resolution message levels (0=off or levels 1 to 7)

- 8** Show freight shipments. Displays blue, red and white lines on the map to show the flow of freight from depots to units and depots to depots. Each unit keeps track of the best, generally the closest, depot that it received freight from during the last logistics phase. The red lines are drawn from the best depot to send freight to a unit to that unit. Blue colored lines display freight moved from ports to port while white lines display non-port depot to depot.
- Ctrl-0** Highlight Partisan Units
- Ctrl-1** Highlight HQ's (Red = High Command (Type 1), Orange = Army Group (Type 2), Yellow = Army (Type 3), Blue = Corps (Type 4).
- Ctrl-2** Highlight Airbases (Air Base Units). Colored bars will appear in all friendly airbases to indicate the number of planes at the base. Green=Ready, Red=Damaged, Blue=Reserve.
- Ctrl-3** Highlight Armor/Motorized/Mechanized Combat Units
- Ctrl-4** Highlight Cavalry Combat Units
- Ctrl-5** Highlight Non-mechanized Infantry Combat Units
- Ctrl-6** Highlight Security Combat Units
- Ctrl-7** Highlight Artillery and Anti-tank Combat Units
- Ctrl-8** Highlight Fortified Region Combat Units
- Ctrl-9** Highlight Rail Repair HQ Units
- Note** Ctrl-# are toggle on/off hotkeys that border applicable unit types from both sides in red. When Fog of War is enabled, only enemy units that have their type identified will be highlighted. Pressing the key toggles the item on/off. Use of a Ctrl-# hotkey or selecting an on-map unit will automatically toggle off any other Ctrl-# hotkey. Ctrl-# hotkeys will only function if either a hex with no units or no hex is selected. The unit type box for the units being currently displayed will show in the top bar above the Soft factors button.
- Space bar** Speed up move in progress or toggle message pause on/off. In addition, the Space bar can be used to select all units in hex with multiple units (stack).
- TAB** Hold down key to show weapons/aircraft icons if weapons pop-up is disabled
- SHIFT** Units in multiple hexes can be selected in preparation for a deliberate attack (15.2.2) by first selecting a hex, then holding down the shift key and moving the mouse over the additional hex or hexes the player desires to select (5.2.3)

3.2.2. CHAIN OF COMMAND SHORTCUTS

There are several keyboard shortcuts that can be used to move/select from one unit to another up, down and laterally within the chain of command.

Page Up/Page Down: Used to navigate up or down the HQ chain of command for the unit attached (up goes to HHQ, down goes to unit reporting to the current unit). Will not go down to airbase units, but will go up from airbase units.

Home/End: Used to navigate to and from units that are lateral with the current unit in the chain of command.

3.3. STARTING A GAME AND THE MAIN MENU

Load the game by selecting (left clicking on) the War in the West icon and then selecting the 'Play Gary Grigsby's War in the West' button in the introductory screen. The main menu screen will then appear which allows access to the game set up functions. The player can quickly choose whether to play a human or computer opponent and set the game difficulty level, or use the game options to change the default game settings. Both the user and map interfaces can be customized before and during a game by accessing the preferences button. The main menu is also used to access the game scenarios, Play by E-Mail (PBEM) set up, Multiplayer set up, and load save game screens. In addition, the Main menu is where the game editor is accessed. All of the functions can be accessed by selecting the appropriate button with the mouse.

3.3.1. HUMAN/COMPUTER OPPONENT SELECTION

There is a selection button for each side (Western Allies and Axis). Selecting the button for either side will toggle between a human and a computer (AI) opponent.

3.3.2. DIFFICULTY LEVEL

There are five general difficulty levels, Easy, Normal, Challenging, Hard and Impossible. The difficulty level is set by varying the percentage of five different factors; morale, fortification building speed, supply, transport, and administrative points (3.3.3). Using the format xxx/xxx, where the first number is the human player and the second number is the computer player, Easy difficulty level has all values set to 120/80, Normal has all values set to 100/100, Challenging has all values set to 90/110, Hard has all values set to 80/125, and Impossible has all values set to 70/150. Players can generate a custom difficulty level by manually setting any of the factors for either side. The default setting is Normal.

V1.01.01 – 30 September 2015

Difficulty levels now have an impact on the air portion of the game as follows:

- a. Morale level: impacts air group morale level when calculating available mileage 0
- b. Morale level: impacts air group NM morale level when gaining morale 0
- c. Morale level: impacts pilot skill level in all air combat and air attacks 0

d. Admin level: impacts aviation support level when repairing AC 0

3.3.3. GAME OPTIONS

Below are listed the options available to the player to set up how the game is played. Note that some game options will be locked and unchangeable after the set-up of PBEM, head to head (H2H), and Multiplayer games. These options will be greyed out in the screen once that type of game is started. Select (left click with mouse) inside the applicable box to change the setting.

Computer Controlled: On/Off for each player; on is AI control, off is human control. The default setting is Western Allies Human and German Computer Controlled.

Fog of War (FOW): On/Off for each player. If checked on, human players are limited by FOW rules (13.2). The default setting is FOW off.

Movement Fog of War: Only displays when FOW is enabled and can only be used in conjunction with FOW. On/Off for each player. If checked on, the show movement path and show movement allowed functions (3.3.5) will only display movement options to hexes if the movement path could be traced via friendly/pending friendly hexes or to hexes adjacent to friendly/pending friendly hexes. The default setting is Movement FoW off and not displayed.

Lock HQ Support: On/Off for each player, when on player's HQ's have their HQ Support Level Locked at start. The default setting is lock HQ support off.

East Front Control: On/Off for the Axis player. When on, the Axis player has control of the Eastern Front. When off, the front line of the Eastern Front follows the historical progression on the historical timetable (23.0).

General Difficulty Level: Cycles through Easy, Normal, Challenging, Hard, and Impossible play levels (3.3.2). These impact the various help levels listed. If a player modifies one of the levels manually, then the General Difficulty play level changes to Custom. For the various help levels that are impacted by the general difficulty levels, a value of 100 percent is the "historical" setting. Values less than 100 make it harder on the player, while values greater than 100 give the player an advantage. These values can range from 25 to 400. The default value for the General Difficulty play level is Normal, with all help levels set to 100 for both players. For games with the East Front Control enabled, any help level impact on the East Front box (23.1.13) only occurs if the AI is playing one of the sides (does not impact human vs human games).

Morale Level: Impacts the starting morale of units, the amount they increase or decrease during game play, and the likelihood of making various leader morale checks (9.1). Whenever the morale level is set to 110 or greater, then leader admin checks for movement allowances are always successful (14.1.2) and units get an extra +1 morale gain from a victory, and lose one less morale point than normal from a loss (but never gain morale from a loss). In addition, whenever the morale level is set to 125 or greater, all leader initiative checks for movement allowance points are also automatically successful. In games with an AI player (not human vs human games), the CV value of the Axis forces in the East Front box is multiplied by the Axis Morale Help Level/100. This is done at the individual unit level for all units in the East Front box (23.1.3).

Fort Build Level: Impacts the speed at which fortification levels are built (15.3.2).

Logistics Level: Impacts the formulas that determine the amount of supply and replacements a unit receives based on its supply trace, to include through ports, the amount of attrition a unit suffers due to movement, the amount of fatigue added or removed from a unit during a turn, and the amount of fuel expended by generic vehicles. This level also affects the ability of leaders to conduct successful admin checks.

Transport Level: Impacts the amount of rail capacity a player receives each turn.

Admin Level: Provides a straight percentage modifier for the number of admin points that a player gets at the start of a scenario, as well as at the start of their player turn (12).

Reset to Default: Selecting this button will return all Game Options to their default settings.

GAMEPLAY NOTE

The red "X" in the game option screen indicates items that have not been selected and may not be changed (for example settings that cannot be changed once a two player game has been started).

V1.00.37 – 7 May 2015

New Game Option - Added No Beachhead VP to the game options screen so these may be set by the players. This allows the player to adjust the victory points lost for failing to have the required beachheads as of February 1944 and July 1944. If the cumulative penalty box is checked, then the player can enter VPs lost each turn for each hex less than 10 in the required beachhead. In this case, the penalty becomes the maximum penalty possible for each requirement. The standard penalty is 400 for Feb 44 and 1000 for July 44.

V1.00.44 – 9 June 2015

Clarification – The morale help level directly impacts the national morale levels. An Allied player with a current USA national morale of 60 and an Allied morale help level of 90 will have an effective USA national morale of 54.

V1.01.37 – 25 May 2016

Added Optional City VP item to the Options screen. This impacts campaign games if toggled on. When on, the victory screen lists that the Allies start with -1200 city victory points due to this option. However, they can earn up to 1600 city victory points in total if they occupy the cities listed in the victory screen. When the cities are captured by the Allies, the points for the city are added to the total Optional City VP total, and this amount is also reflected in the Campaign column of the City Points. For example, at the start of the 1945 campaign, Paris (worth 400 points) and Antwerp (worth 200 points) are occupied by the Allies. Thus, the Optional City Points is equal to -600 (-1200+400+200), and this amount is reflected in the City Points Campaign score. The intention of this rule is to provide additional rewards for the Axis player to accept casualties and advance into Germany. While we recommend this game option for all games, we strongly suggest that this game option be turned on when not playing with the East Front Option. This prevents the Allies from accepting a Soviet takeover of Germany, while striving to maximize bombing points and minimize casualties. This was not politically acceptable to the Allies.

3.3.4. USER PREFERENCES

The below settings can be used to customize aspects of the interface. Many of these settings can be changed at any time during the player turn, but some require the player to exit the game and reload prior to the change taking place. As a reminder, the use of the word “select” means to left click with the mouse.

Screen Mode: Select the appropriate box next to the graphic for windowed or full screen mode. The left choice is windowed mode and the right choice is full screen mode. Default is windowed mode. The player will have to exit the program after making a change for the change to take effect. Note that if windowed mode is selected for computer screens set at 768 or 800 pixels, some information may be lost on some screens. For those screen resolutions it's suggested to play in Full Screen mode.

Graphic Quality: Select the appropriate box for low or high graphic quality. The down (left choice) arrow is the low setting, while the up (right choice) arrow is the high setting. The game must be exited and reloaded for the change to take effect. Note that a low setting is recommended for older computers or those with low memory or older graphics cards. If map scrolling and combat or move animations look sluggish, try the low setting. The default graphic quality is the high setting.

Scroll Speed: Sets the time it takes to scroll across the map. Select the left arrow to decrease the time and the right arrow to increase the time or select directly inside the box with the current number and enter the desired time. Scroll speed can be set from 1 to 30 in .5 increments (if directly entered it can be set in .01 increments). The default scroll speed is 4.00.

Message Delay: This sets the amount of time (in seconds) a standard pop-up text message will display on the game screen, to include reserve unit commitment messages. By selecting the left (decrease) or right (increase) arrows or by selecting directly inside the box with the current number and entering the desired time, the value can be set from 0 to 30 seconds in .5 increments (if directly entered it can be set in .01 increments), with a 0 resulting in no messages being displayed. The default setting is 2.00 seconds.

Hex Pop-up Delay: Sets the amount of delay in seconds before the hex pop-up triggered by the mouse cursor will appear (5.2.1). The hex pop-up describes the hex on the map the mouse cursor is currently over. This information includes the terrain, hex number, fort level, control and information on units in the hex. If 'View Production Facilities' has been toggled on, production information will also be displayed in the hex pop-up. If 'View Logistics Info' has been toggled on, logistics information will be displayed. Additional information will also be displayed if the 'Show River/Rail Info' map preference has been enabled (3.3.5). By selecting the left (decrease) or right (increase) arrows, or by selecting directly inside the box with the current number and entering the desired time, the value can be set from 0 to 30 seconds in .5 increments (if directly entered it can be set in .01 increments). Setting this value to 0 will prevent the hex pop-up from appearing. The weapon/aircraft icons box (3.3.5) will be triggered at the same time and with the same delay as the hex pop-up and will also be prevented from appearing if that value is set to 0. The default setting is .33 seconds.

Mouseover Delay: Sets the amount of delay in seconds before a pop-up triggered by the mouse cursor will appear, with the exception of the hex pop-up, which has a separate delay setting (see above). By selecting the left (decrease) or right (increase) arrows, or by selecting directly inside the box with the current number and entering the desired time, the value can be set from 0 to 30 seconds in .5 increments (if directly entered it can be set in .01 increments). The default setting is .33 seconds.

Combat Resolution Message Level: This determines the amount of information given about a battle in the Combat Resolution window that appears at the top of the screen during combat resolution. By selecting the left (decrease) or right (increase) arrows, or by selecting directly inside the box with the current number and entering the desired number, the value can be set from 0 to 7 in increments of 1. A level of 0 will keep this window from appearing at all. Level 1 will provide only a minimum level of information messages, resolving the battle as quickly as possible. Level 1 will also prevent the window from appearing for Recon Air Missions. As the level is increased from 2 to 7, the amount of information reported will increase, with level 7 describing each shot fired by the units in combat. Note that not all shots are displayed even at level 7 message settings. There is no message for a shot that is considered to have too low a probability of a hit, defined as much less than one percent. This level may be set during game play, to include during combat resolution, by pressing the numbers 0-7. The default setting is 1. Note: Pressing the X (exit) button or the 'Esc' key will close the combat resolution window. Selecting the pause button will freeze the combat resolution in place and keep the window from closing down, but the combat resolution messages cannot be restarted for that combat, requiring the user to left click on the X or press Esc to close the window. The default setting is level 1.

Combat Resolution Message Delay: This delay sets the amount of delay in seconds before the next combat resolution text message appears in the Combat Resolution window. By selecting the left (decrease) or right (increase) arrows, or by selecting directly inside the box with the current number and entering the desired time, the value can be set from 0 to 30 seconds in .5 increments (if directly entered it can be set in .01 increments). The default setting is 1.00 seconds

Combat Resolution Close Delay: This delay sets the amount of time in seconds that the combat resolution report window will remain displayed after the battle is resolved and the last message is displayed. By selecting on the left (decrease) or right (increase) arrows, or by selecting directly inside the box with the current number and entering the desired time, the value can be set from 0 to 30 seconds in .5 increments (if directly entered it can be set in .01 increments). The default setting is 5.00 seconds. Note: Pressing the X (exit) button or the 'Esc' key will close the combat resolution window. Selecting the pause button will freeze the combat resolution in place and keep the window from closing down, but the combat resolution messages cannot be restarted for that combat, requiring the user to left click on the X or press Esc to close the window.

Air Execution Phase Detail: Determines the amount of information provided during the air execution phase. Values available are None, Low, Medium, and High. Default is None. When None, then the map does not recenter during the air phase for each event and no combat reports are shown. With Low, the map will recenter over each battle (bombing event, recon event, or interception event battle site) and you the red line with the path of the bombers and green lines with the path of the interceptors (if any) to the battle hex will be displayed. The Combat window will be shown if the combat resolution message level is 1 or greater (although recon battle sites will not be show at detail 1). More detail will be shown in Medium and High AD execution detail levels.

Auto-Save Game: When enabled by selecting the check box to the right of the "Auto-Save Game" text, the current game will be automatically saved at the end of each player turn. The default setting for Auto-Save game is off. Note that the auto-save game function is not available for PBEM games.

Starting Zoom Level: Sets the default map zoom level that will be used whenever a new scenario or save game is loaded. Select inside the box to the right of "Starting Zoom Level" to toggle between the five zoom levels, Max-Out (level 5), Out (level 4), Medium (level 3), In (level 2), Max-In (level 1). The default setting is level 2 (In).

Show Move Animation: When enabled by selecting the check box to the right of the "Show Move Animation" text, friendly units will be shown moving from hex to hex on the map, accompanied by their respective sound effect if that preference is enabled. If not enabled, units will move directly to their destination. While a unit is moving with the animation enabled, the player may press the space bar to have the units immediately move to their destination. This preference does not impact computer controlled units. The default setting has show move animation enabled.

Animation Speed: This sets the amount of delay in seconds between each hex moved for a unit using move animation. By selecting the left (decrease) or right (increase) arrows, or by selecting directly inside the box with the current number and entering the desired time, the value can be set from 0 to 30 seconds in .5 increments (if directly entered it can be set in .01 increments). The default setting is .33 seconds.

Music Volume: Sets the volume for music by selecting the left (decrease) or right (increase) arrows, or by selecting directly inside the box with the current number and entering the desired time. The value can be set from 0 to 10 in increments of 1, with a value of 0 resulting in no music. The default setting is 10.

Sound Effects Volume: Sets the volume for sound effects by selecting the left (decrease) or right (increase) arrows, or by selecting directly inside the box with the current number and entering the desired time. The value can be set from 0 to 10 in increments of 1, with a value of 0 resulting in no sound effects and no mouse click noise (see below). The default setting is 10.

Mouse Click Volume: Set the volume for mouse clicks by selecting the left (decrease) or right (increase) arrows, or by selecting directly inside the box with the current number and entering the desired time. The value can be set from 0 to 10 in increments of 1, with a value of 0 resulting in no mouse clicks. If sound effects volume is set to 0, then mouse click volume is overridden and no mouse clicks will be heard. The default setting is 10.

Reset to Default: Select the button to the right of the "Reset to Default" text to return all user preferences to their default settings. Note that there is a separate default reset for both the user and map preferences section of the preferences screen.

3.3.5. MAP PREFERENCES

The below settings can be used to customize aspects of the map area. Many of these settings can be changed at any time during the player turn, but some require the player to exit the game and reload prior to the change taking place. As a reminder, the use of the word "select" means to left click with the mouse. If the appropriate box has a check mark displayed, that feature is enabled; if blank, that feature is disabled.

Show Jump Map: Select the check box to the right of the "Show Jump Map" to display a small jump map in the bottom left corner of the screen that shows the entire map area. Units will be displayed as dots, with black for Axis and Red for Allied units. If Fog of War is enabled, units with a zero detection level will not be shown (13). When using a scenario that uses only a portion of the map area, a blue box will display around the playable area. The default setting has show jump map enabled.

Show Ground Element/Aircraft Icons: Select the check box to the right of the "Show Ground Element/Aircraft Icons" text to display a pop-up window at the bottom of the screen when the mouse cursor is placed over hexes with units in the map area. Icons will appear in this pop-up representing the ground elements and aircraft located in the hex, to include support units attached to cities, HQ units, and combat units in the hex, along with the number of each ground element/aircraft that is in the hex. Armoured Fighting Vehicles, other combat vehicles, and aircraft are shown separately, while guns and squads are grouped according to their type. If this preference is disabled, the information can be temporarily display by pressing and holding the 'Tab'

key; releasing the 'Tab' key will remove the additional information from the display. The default setting has show ground element/aircraft icons enabled. Setting the hex pop-up delay (3.3.4) to 0 will also disable the ground element/aircraft icons.

Show Army/Front Colors: Select the check box to the right of the "Show Army/Front Colors" text, to enable each Axis or Western Allied Army to be represented by a distinct color. This color will fill in the unit type box of all units that are part of the Army instead of the standard white fill color. The default setting has show Army/Front colors enabled. Note that while there are no Soviet Fronts featured in War in the West, they were in War in the East and will return in future games in the series.

Show Move Path: Select the check box to the right of the "Show Move Paths" text, to display compass symbols on the map indicating the path of hexes the currently selected unit(s) will move through to reach the hex where the mouse cursor is presently located. Each hex on the path will contain a compass symbol with the anticipated movement points remaining for the unit if it were to move to the hex. If there are multiple selected units, the numbers displayed will be equal to the anticipated MPs remaining for the unit that is expected to have the least number of remaining MPs upon moving to the hex. Due to idiosyncrasies of the movement routines and the impact of morale and unit motorized status on movement costs, it is possible for the actual number of MPs remaining to be higher than what is anticipated by the number on the compass. The default setting has show move paths enabled. If a unit is moved when the map is at zoom level 5 (Max-Out) then the movement path will not be displayed. Movement compass symbols will be blue for Axis and green for Western Allied units.

Show Allowed Movement: Select the check box to the right of the "Show Allowed Movement" text, to display those hexes that the currently selected unit(s) may move to by shading the hexes the unit(s) cannot move into as well as shading hexes that can be moved into with an additional movement cost. The different shadings are as follows:

No shading – Friendly hex that can be moved into.

Light grey – Pending friendly hex that can be moved into.

Light red – Enemy hex that can be moved into.

Very dark grey – Movement to that hex is not possible.

Very dark red – Enemy (or impassable) hex that the unit cannot move into.

The default setting has show allowed movement enabled.

Unit Values Display Type: This sets whether numerals or short name will be displayed on the unit counters reflecting the name, combat strength and/or movement points of the unit. This can be set to Numeral or Name by selecting the box to the right of the "Unit Values Display Type" text. Numerals and names will only be displayed at the Max-In and In (levels 1-2) zoom levels. The default setting is Numeral. This setting can also be toggled using hotkey 'y'.

Unit Counter Info: This sets the specific information displayed on the unit counters regarding a unit's combat strength and movement points. This preference works together with the Unit Values Display Type preference so 'NAME' is selected, then only the short name of the top unit in the stack will be displayed, no matter what the unit counter info setting. This preference can be set to CV-Move, GarCV-MOVE, or COMBAT by selecting the box to the right of the "Unit Counter Info" text. If CV-Move is selected while the Unit Values Display is set to Numeral, then the counters will display the CV and Movement Points (MP) remaining. If GarCV-MOVE is selected, then the counters will display the garrison CV and MP remaining with a 'G' in between. Note that the garrison CV is applicable only to German non-fortified zone units and is different from normal CVs in that there is no vehicle shortage penalty and no weather penalty when calculating the garrison value of a unit (18.2.1). If COMBAT is selected while the Unit Values Display is set to Numeral, then the counters will display the CV value followed by another CV value that accounts for the fortification defense modifier (15.3). The CV displayed is the total for all selected units in the hex, but in all cases the MPs displayed is the most MPs remaining by any unit in the hex. The default setting is CV-Move. Note: If unit values display is set to name, enemy units will have no information displayed in that area of the counter. For numeral Unit Counter Info setting, enemy units will be displayed on the map as if the setting is COMBAT; i.e. with the CV value followed by the CV value with the fortification defense modifier. This setting can also be toggled using hotkey 'z'.

Hex Pop-up Location: The default setting results in the hex pop-up appearing on the map where the cursor is currently located. This can be changed so that the hex pop-up will appear in one location based on inputting x and y map pixel coordinates. Select inside the black text box to the right of the "Hex Pop-up Location" text. Enter an 'X' position and select the check; then enter a 'Y' position and select the check. The map grid is set up with (0 X, 0 Y) in the top left corner and the map size is approximately 720x550 pixels. The region pop-up location can be reset to the cursor by entering '-1' for the 'X' coordinate.

Show River/Rail Info: Select the check box to the right of the "Show River/Rail Info," to enable additional hex pop-up information. When enabled, the hex pop-up text will include information about any adjacent river hexsides, impassable lake hexsides, rail lines that enter the hex, points for victory objectives in non-campaign scenarios, and unit numbers of any units in the hex. Information about points for victory objectives will be in the format xx/xxx, where the first number is the amount of points received by the applicable player every player-turn for control of the hex and the second number is the amount of points the applicable player will receive for control of the hex at the end of the scenario. For example, a hex that displays 'WA Victory Points 10/400' will give the Western Allied player 10 points every player-turn they control the hex and a separate 400 VP's if the Allied player controls the hex at the end of the scenario. The default setting has "Show River/Rail Info" enabled.

Auto Air Directive Creation Screen: If this box is checked, the Automatic Air Directive Creation screen (5.3.1) will appear at the start of each turn. Default is on.

Reset to Default: Select the check box to the right of the "Reset to Default" text to return all map preferences to their default settings. Note that there is a separate default reset for both the user and map preferences section of the preferences screen.

3.3.6. PICK SCENARIO

The left side of the screen displays the list of available scenarios and the date and time of the latest updates to those scenarios. The list of scenarios can be sorted either alphabetically by title or by date through selection of the applicable arrow at the top of the display. Selecting a scenario title will bring up a description on the right side of the screen. To load a scenario, select the title and, once the title font becomes green, select the load button located at the bottom left of the screen. A progress bar will display the status of loading the scenario and the player will be given the opportunity to select a folder name for the game saves for that scenario. A default folder name will be provided, but it can be changed as the player desires. If the player selects cancel [x], no folder will be created and any saved game file will be listed separately.

3.3.7. PLAY BY E-MAIL (PBEM)

PBEM allows two human players to play Gary Grigsby's War in the West by exchanging turn files by e-mail in a manner that inhibits cheating. Selecting the PBEM button either here or in the Load Saved Game screen toggles PBEM on or off. A check will appear in the PBEM box if PBEM is enabled. The default setting for PBEM is disabled. To start a PBEM game, the second player to move in the chosen scenario (e.g. the Axis player in the 1943-45 Campaign or the Western Allies player in the Bulge to the Rhine scenario) enables PBEM, sets the agreed upon Game Options and then selects the scenario. The second player will then be prompted to create their password. Once a password has been created, the second player will be taken to the PBEM Save Game screen, where they will create a save game, which will be saved as a .psv file in the /data/save directory. The second player will then be automatically taken back to the main menu. The second player will then e-mail the save game file to the first player, who will transfer the file into their /data/save directory. They will then enable PBEM, load the save and then will be prompted to create their own password. The first player will then take their turn, saving whenever they want. Once the first player has finished their turn and selected the end turn button (F12), the computer will conduct the next Logistics phase and the Amphibious phase during which the map display will be blank, then prompt the first player to save the game so it can be e-mailed to the second player to continue the PBEM cycle. Note that there are no auto saves during PBEM. In addition, the Loss screen does not come up automatically when the end of turn save is loaded by the next player. If the player views the Loss screen before doing anything else, however, they will see the last turn's losses, including their own attrition losses. At the conclusion of a game, the player that sees the end game info can save the game and exit and the save created becomes a PBEM save that the next player can load using his password in order to view the same end game info.

3.3.8. LOAD SAVED GAME

The left side of the screen displays the list of folders for saved games with any games saved without creating a folder listed underneath. Selecting a folder will display a list of available saved games and the date and time when that game was saved. The load saved game screen defaults to sorting the save list by date from most recent to oldest. The list of saves or folders can be sorted either alphabetically by title or by date through selection of the applicable arrow at the top of the display. Selecting the folder icon with an up arrow will take the player back to the list of folders. Selecting a save game title will bring up a description on the right side of the screen that includes the title of the scenario being played, the current turn of that scenario and whether the players are human or computer. To load a saved game, select the title and, once the title font becomes green, select the load button located at the bottom left of the screen. A progress bar will display the status of loading the game file. There is a separate PBEM Load Saved Game screen with the same type of information that will appear if PBEM is enabled either by toggling the PBEM button on the main screen or the PBEM button at the bottom of the load saved game screen. A check will appear in the PBEM button if PBEM is enabled.

v1.01.20 – 1 February 2016

Added more verbose error code display when game fails to load a save

3.3.9. MULTIPLAYER

Multipayer (MP) allows human players to play the game over the internet through a server based system hosted by Slitherine Ltd. Players can log on to the server, post and accept game challenges, and conduct their turn in any scenarios they are currently playing. An internet connection and a Slitherine account will be required to utilize the multiplayer system.

V1.01.01 – 30 September 2015

Multipayer – There is a new messaging capability now built into Multipayer. You can use this when setting up a Multipayer game, to better describe the Challenge and also to communicate with your opponent each turn without needing an e-mail address or other contact information. Messages can be up to 255 characters in length and will be visible to all players in a Multipayer game. When setting up a challenge, note that you can click on the text box near the bottom right of the screen and enter a message of up to 255 characters. Press enter after completing the message, and the message will appear in the message section of the screen. This will show the most recent messages from all of the players. When you start your turn, you may see a message that you have an unread message from your opponent. F12 will bring up the message interface. When you hit End Turn, you will also have a chance to read messages and add your own message, before the turn is completed and uploaded to the server. Operation Torch users that are able to set up multiplayer games with more than 1 player per side, may also set messages to be sent as public (visible to all players) or private (only visible to players on your

side). You can also filter the messages in the list by clicking on the. Players can also filter the messages displayed in their list by player or by turn. There is a maximum of two messages that may be added after loading a save from the server. Any Multiplayer game created while using the 1.01.00 version (or a later version) should only be accepted by a player also using 1.01.00 (or a later version). Ongoing Multiplayer games can be continued. Additional information on Multiplayer features can be found in the Operation Torch Scenario Notes manual.

Multiplayer (Torch ground/air commander split) – Air commanders may only compose messages prior to beginning the air execution phase. Once the air execution phase has completed, the game will be uploaded to the server for the next player to download. The air commander will then be placed in Air Review Mode where he will be able to look over the map and view the results of the air execution phase. This is purely a review phase for the air commander since the game has already advanced the turn to the next player. To exit the air review phase and return to the main menu, press the end turn (F12) button.

3.3.9.1 LOGIN PROCEDURE

The first time the multiplayer system is used after the game has been installed, the player will be taken to an initial login screen with fields for username, password and registry number, which will already be automatically entered. A Slitherine account (www.slitherine.com) is required. If the player already has a Slitherine account, they can enter that username and password and select the login button. If the player does not have a Slitherine account, then they will select the register button, which will bring up the account registration screen. Here they will be prompted to enter a username, password and e-mail address to obtain a Slitherine account. Upon completion of either initial login or account registration, and on any subsequent selection of the multiplayer button, the standard login screen will appear. The standard login screen will already display username, password and registry number. Select the connect button to access the MP server and the MP screen.

3.3.9.2. MULTIPLAYER PROCEDURE

The main MP screen consists of three sections as follows:

My Challenges: This section is used by the player to post scenarios that they wish to play. Selecting the 'New' button will bring up a 'Select Scenario' screen listing all the game scenarios (23.1). Selecting a scenario will highlight it in green and bring up the scenario description. Selecting the 'Select' button at the bottom of the screen will bring up the Game Options screen (3.3.3), where the player can change settings as desired. Note that some options cannot be changed in MP. Once the player has completed any changes to the Game Options, select the 'Create' button and the main MP screen will appear with the selected scenario listed in the 'My Challenges' section. A scenario listed in the 'My Challenges' section can be deleted by selecting it and then selecting the 'Cancel' button. Scenarios listed in the 'My Challenges' section will appear on all other player's 'Open Challenges' section.

Open Challenges: This section lists all the scenarios posted by other players in their 'My Challenges' section. Selecting a scenario and then selecting the 'View Options' button will bring up the Game Options screen with that scenario's setting. Selecting a scenario and then selecting the 'Accept' button will add that scenario to the player's list of active games in the 'My Games' section.

My Games: This section lists all active games being played, with the Axis and Western Allies sides listed by login username for each scenario. The side/player whose turn it currently is will be highlighted in green. Selecting the scenario when the proper side is highlighted and then selecting play will allow the player to conduct their turn. If desired, the player may use the 'Resign' button. 'Show Completed' and 'Show Resigned' buttons on the screen can be used to filter the game list. Upon completion and selection of the end turn button (F12), the scenario listing will be updated to reflect that it is the other side's turn. Note that the player can save their player turn in progress, but whenever a game is saved when using the Multiplayer feature, the player is returned to the main menu. If an attempt to save the game fails, the player will be informed of this event and given the opportunity to try again.

Hovering the mouse over the games in the games and challenges lists will display text providing additional information about the listed games.

3.3.9.3. PUBLIC AND PRIVATE CHALLENGES

There are two types of challenges; 'private' and 'public.' When a challenge is created a password dialog box will appear on the Game Options screen. If the password is left blank, a public challenge is created that anyone can accept. If a password is entered, a private challenge is created that can only be accepted by players who have the password. Note that there is no in-game messaging, so passwords will need to be passed by other forms of communication. A challenge is displayed as either 'private' or 'public' by the character just to the left of the challenge name; a "-" for a public challenge, and a "*" for a private challenge.

3.3.10. CREDITS

This screen displays a list of the people involved in making Gary Grigsby's War in the West possible.

3.3.11. EDITOR

Selecting this button brings up the main menu of the game editor. See the game editor manual .pdf file for details.

V1.01.37 – 25 May 2016

Editor - Added ability to mark/unmark units.

4. SEQUENCE OF PLAY

Gary Grigsby's War in the West is a turn based game, with each game turn composed of separate Axis and Western Allies Player turns. The term "phasing player" is used for the player who is currently conducting their player turn. For example, during the Axis player turn, the Axis player is the phasing player and the Western Allies player is the non-phasing player. Each player turn consists of a player specific logistics phase and a general logistics phase, which are comprised of a number of segments and sub-segments and are both conducted automatically by the computer (4.2). An air directive planning phase is followed by the execution of the majority of air missions as well as air maintenance, to include any air training missions (4.2). In the action (movement) phase, unit movement and ground combat and other player manual actions, to include air transport, are conducted. The computer may conduct actions with the non-phasing player's forces during the action phase, to include commitment of support units and reserve combat units to battles and air missions such as interception and defensive ground support. Amphibious assaults and airborne landings in support of amphibious invasions are resolved at the beginning of the next player's turn. In PBEM and Multiplayer games, the amphibious phase is resolved before the Allied player saves the game (or uploads it to the server in case of Multiplayer). Also, the map is blacked out during the phase so the Allied player is not able to see what is happening. The current phase (Logistics, Air Planning, Air Execution, Move (Action)) is listed in the space to the right of the menu tabs. In addition, during the Action (Move) phase, the current status of air ground support (GS) is noted as either on or off (hotkey x).

4.1. GAME TURN OVERVIEW

A. Axis Player Turn

- 1) Axis Logistics Phase
- 2) General Logistics Phase (for Axis units only)
- 3) Allied Amphibious Phase (Multiplayer Upload Point)
- 4) Allied Player PBEM Save Break Phase (PBEM only)
- 5) Axis Air Planning Phase
- 6) Axis Air Execution Phase
- 7) Axis Action Phase (ground movement and combat)

B. Allied Player Turn

- 8) Allied Logistics Phase
- 9) General Logistics Phase (for Allied units only)
- 10) (Multiplayer Upload Point)
- 11) Allied Air Planning Phase
- 12) Allied Air Execution Phase
- 13) Allied Action Phase (ground movement and combat)

NOTE

There are no logistics phases for the first player on the first turn of any scenario. If the Axis player is the first player, the scenario will start with the Axis Air Planning phase, if the Western Allies player is the first player, the scenario will start with the Allied Planning phase. On turn two and following turns the game will follow the normal sequence of play. Note that this means that in scenarios with the Western Allies as the first player, the first ten phases of the Game turn are skipped on the first turn, so that the Axis player has no first turn and the Allied player has no logistics phases.

4.2. SUMMARY OF LOGISTICS AND AIR EXECUTION PHASES

The logistics phase and air execution phase consist of numerous actions that are conducted by the computer. Below is a summary of the major activities that occur during these phases.

4.2.1. LOGISTICS PHASE

Each player turn normally includes a player specific logistics phase with distinct segments followed by a general logistics phase that has the same segments and sub-segments for each player. The game switches to normal (F1) mode at the start of the logistics phase. The map popups, top menu buttons, and shortcuts are disabled during the logistics phase. The admin points and

vehicle pool values are also cleared from the screen during the logistics phase. The major actions that occur during this phase include attrition, building of fortifications, weather determination during the Western Allies logistics phase, all facets of production, upgrade and swapping of equipment and aircraft, recovery of disabled manpower, morale and fatigue adjustments, unit reinforcement and withdrawals, administrative point adjustment, hex change of control, removal of temporary motorization, repair of rail, factories, and depots, expansion of air base units, determination of partisan attacks and damage, leader adjustments, freight movement, provision of unit supply and replacements, to include aircraft and pilots, movement of support units and support elements, setting of unit movement point allowances, resetting of rail usage, rally of routed units and unit surrender check, adjustment of unit detection levels due to ground recon, and adjustment of scenario victory points.

4.2.2. AIR EXECUTION PHASE

During the air execution phase the computer conducts air missions, to include air group units flying pilot training, over the seven days of the turn with a day and a night segment for each day of the turn. In addition, each day of the turn has a maintenance segment where replacement pilots and aircrew can be added to air group units, aircraft are repaired and air base units can be repaired and resupplied with fuel and ammunition.

V1.01.01 – 30 September 2015

Changes made to the air game rules that are documented in the [OnePageGuide 4b](#):

Added detailed info regarding aircraft losses into the supply event log in the air execution section, which is now exported (all air execution data) after air execution into a txt file in the dat/saves/logs folder.

5. GAME INTERFACE

The interface consists of a top panel, map area, unit bar (when units are selected) and a myriad of associated screens and windows for providing information and conducting various actions. As previously discussed, with the exception of some actions in the map area (5.3), selecting is done by left clicking with the mouse on buttons and selectable text links. Active selectable text links are usually blue and become yellow when the mouse pointer is over them.

5.1. TOP PANEL

The top panel is a multi-purpose interface that provides information and allows interaction with the map area and on-map units. It consists of a title bar, three menu tabs (Map Information, Information Screens, and Administration), each with a separate associated toolbar, unit soft factor selector, general information and city box, and an action mode selection toolbar, which will display different action modes depending on whether it is the air planning or movement phase. With the exception of the title bar, the top panel color will be grey during the Axis player turn and green during the Western Allies player turn. In addition a German or US/UK flag symbol will be displayed in the far right of the top panel to indicate the current player turn.

5.1.1. TITLE BAR

This is a standard MS Windows title bar with minimize, maximize and close buttons. It will display the game version number and the name of the scenario currently loaded. Note that the player must use the title bar close button (X) in the upper right corner to exit the program during the computer AI turn as the Admin menu tab 'X' button and associated hot key 'Shift-Q' are disabled during that time. There is no way to return to the main menu once the AI commences processing its turn.

5.1.2. MENU TABS AND ASSOCIATED TOOLBARS

There are three menu tabs, each with its associated tool bar that can be selected by left clicking on the desired tab. The map information tab is the default when first loading the game, but if the scenario is changed without exiting the program, the last selected tab will be displayed after loading the new scenario. Only one menu tab can be active at one time and the active tab will be in the foreground. All tool bar buttons have an associated hotkey. To the right of the tab is a space that displays the current phase (Air Planning, Air Execution, Move (Action), Logistics (with current segments and sub-segments), to include whether ground support is enabled or disabled during the Action (Move) phase.

5.1.2.1. MAP INFORMATION TAB

The tool bar buttons associated with this tab offer a mixture of different map area views and unit action buttons as follows:

View Units on Map (hotkey t): Hides all on-map units when toggled to allow unfettered view of the map area

Zoom Map in (hotkey '+' or scroll): Five zoom levels available.

Zoom Map out (hotkey '-' or scroll): Five zoom levels available.

View Enemy Hexes On/Off (hotkey e): Distinguishes between friendly, pending friendly and enemy hexes (6.3). Friendly hexes will be clear. Enemy hexes will be shaded rose, and pending friendly hexes will be shaded grey. Also displays the progress of the Eastern Front by darkening hexes that are considered Soviet controlled (23).

View Fort Levels On/Off (hotkey f): Displays a circular symbol with a number in hexes that have a manmade fortification level of one or greater (15.3.2). The inner ring of the symbol is grey for Axis fort levels and green for Western Allies fort levels and the

number indicates the current fort level. Note that the ability to view enemy fort levels is limited when Fog of War (FOW) is enabled (13.2).

View Rail Damage Info On/Off (hotkey r): Displays status of railroads in friendly and pending friendly hexes. The symbol is dark green for undamaged rail, red for damaged rail and orange for rail undergoing repair that turn. Rail hexes that have white dots within a green circle are hexes that have been converted but are not connected to the rest of the rail network or are rail hexes that cannot be used for strategic rail movement or supply purposes due to being adjacent to enemy units. In addition to rail damage, hexes further than 10 hexes or 25 MP from a railhead are shaded light grey, hexes further than 25 hexes or 100 MP from a railhead are shaded dark grey, enemy hexes are shaded rose, and rail repair HQ units are bordered in yellow.

View Unit Modes/Isolated On/Off (hotkey Shift-r): Highlights on-map unit counters with a colour border if they are in one of five different modes. Isolated units will be bordered in red, units in Refit (20.5.6) will be bordered in blue, Withdrawing units (19.2) in orange, Reserve units (15.5) in purple and Static units (10.2) in white. Note that on-map highlighting will only display if no hex or a hex with no units is selected.

View Logistics Information (hotkey n): This function can be toggled in conjunction with other functions, to include the 8 key showing depot lines and the view factory location (shift-l). When toggled, the following is shown for the phasing player:

Depots:

Hexes with depots are marked on the map area with an inverted triangle and a white symbol denoting the type of depot (20.0).

Type 1 depots (railyards) are marked with a rail symbol, type 2 depots (receiving port) with an anchor symbol, type 3 depots (shipping and receiving port) with a ship's wheel, and type 4 depots (national supply source) with a star.

Depot supply priority levels are indicated by a color coded number in the middle of the depot symbol with bright green=4, dark green=3, yellow=2, orange=1, and red=0. The depot priority level can be changed by hovering over the hex and pressing "." and ";" keys to increase or decrease the depot priority. This is not possible when in F11 mode.

Bars are shown at each depot. The Green bar represents the amount of freight received during the logistics phase, the blue the amount of freight currently stored at the depot, the red bar the amount of freight that has been sent out by the depot this turn, and the black bar the total storage capacity of the depot. Each segment of the bar represents 40k tons of freight, while the depot must have at least 100 tons to qualify to show any part of the bar. The maximum the bar will show is 20 increments which is 800k tons, so anything over 800k will display the same bar height.

Rail Usage: Hexes with rail lines are color coded based on tons of rail usage. Below are rail usage ranges with associated color codes and strategic movement point penalties per hex.

Bright green: 0 usage – No usage

Dark Green: 1 – 4999 tons – No SMP penalty

Yellow: 5000 – 9999 tons – +1 SMP penalty

Yellow: 10000 – 14999 tons – +2 SMP penalty

Orange: 15000 – 19999 tons – +3 SMP penalty

Orange: 20000 – 24999 tons – +4 SMP penalty

Orange: 25000 – 29999 tons – +5 SMP penalty

Red: 30000+ tons – +6 SMP penalty

Hex pop-up: Text includes the actual numerical values used to generate the bars at each depot. Also included in parentheses next to the stored amount is the amount of freight that was stored at the start of the logistics phase. The hex pop-up text also displays the percentage of maximum capacity for the Received and Stored (at start of the logistics phase) values, as well as the capacity of the depot.

Air Base Units: Airfield symbols are color coded based on their fuel or ammo percentages, using the lower percentage among the two items. Green is for fuel/ammo greater than 70 percent of need, yellow for 56-70 percent, orange for 41-55 percent, and red for less than 41 percent. Air Base units that are empty are shown in black. Enemy airfields are all shown in green.

View Factory Locations On/Off (hotkey Shift-l): Town, City and Urban hexes with factories, to include manpower, ports, railyards and resource production have their hex shaded red and display symbols for each type of factory present. The factory symbols will be color highlighted based on the amount of damage, with green for no damage, yellow for 1-50 percent damage and red for 50-99 percent damage. Hex pop-up text will provide detail on factories, to include damage percentage, which will vary in accuracy if Fog of War is enabled (13.1.1). Towns with manpower production only will not be shaded, but the manpower symbol will be displayed and the hex pop-up r text will list the manpower production. Factory symbols will also display when a Strategic Bombing air directive is active (5.3.8).

View Air Recon Levels (Shift-t): When enabled, enemy controlled hexes are shaded based on current tactical air reconnaissance values (17.3.1). The larger the recon value, the lighter the shade, with the shades ranging from very dark (no recon value) to clear (large recon value). In addition, numerical air recon values greater than zero will be displayed in the hex pop-up text. Air interdiction values (see below) will also be displayed in the hex pop-up text.

View Air Interdiction Levels (Shift-u): When enabled, air interdiction of ground hexes and air and naval interdiction of sea hexes will be displayed on the map area using a color coded roundel symbol, green for Allied and grey for Axis, with a white aircraft. The number in the roundel is the interdiction value divided by ten and truncated, so an actual value of 39 would be displayed as a 3. For ground air interdiction, only the phasing player's symbol will be displayed. For air and naval sea interdiction, the symbols for both sides will be displayed for comparison purposes. The hex pop-up will display the numerical interdiction values for both sides

in ground and sea hexes. Control of sea hexes will be indicated by shading with enemy controlled hexes shaded red, friendly controlled hexes unshaded, and contested hexes slightly darkened. Can be used in conjunction with naval transport (F3) or naval amphibious (F4) movement phase modes to determine hexes where naval movement will be contested (16.5.2).

View Air Directive Targets (Shift-y): Displays all the air directives on the map. When in a specific air directive creation mode, only those air directives of the particular mode will be shown (i.e. if in Recon AD mode, only recon missions will be shown on the map).

Weather Graphics Types (Shift-w): Toggles between on map display of weather condition symbols, displaying all (aircraft and AFV symbols), ground (AFV symbol), air (aircraft symbol), or none (greyed out). Hex pop-up text will always state current air and ground weather condition.

View Victory Point Locations (Shift-v): Displays flag symbols at victory point locations for non-campaign scenarios. Red flags indicate Western Allies VP locations, black flags indicate Axis VP locations, and red and black flags indicate a VP location for both sides.

View Axis Garrison Cities (Shift-k): Displayed during Axis turns only. A city may require a security unit and in some cases also requires units with at least 10 Combat Value (CV) (18.2). If whatever requirements are in effect are fully met, then the hex is purple. If both a security unit and 10 CV is required, and there is a combat unit in the hex but not at least 10 CV or a security unit is not in the hex, then the hex is yellow. If no combat unit is in the hex, then the hex is red. Also highlights all security units in yellow.

NOTE

At Zoom levels 1 and 2 ((Max-In and In)) the 'Y' key can be used to display either numbers on counters or a graphic bar or blank info. At zoom level 3 only the graphic bar or a blank is displayed, and at zoom levels 4 and 5 (Out and Max-Out) the information is blank. Soft factors and movement status can be viewed in zoom levels 1 through 3 and unit type and size at zoom levels 1 through 4. At zoom level 5, only unit nationality and whether the unit is German SS or Luftwaffe will be displayed by the color of the unit. Rail lines will not display at zoom level 5.

V1.01.31 – 9 April 2016

Interface change - Changed the way map zoom works. It will zoom around a mouse cursor position, not around current hex.

5.1.2.2. INFO SCREENS TAB

The majority of the below screens accessed through the tool bar buttons on this tab are informational only, but the player can influence air operations in the Air Directives Summary screen during the air directive planning phase and the Air Doctrines screen during both air directive planning and move (action) phases. In addition, the Commanders Report screen can be used to change various unit settings.

Display Order of Battle Screen (hotkey o): This screen provides the phasing player a complete Order of Battle down to the individual unit level and also provides a summary of the status of each country's army and air force (26.3.1).

Display Loss Screen (hotkey l): This screen provides the phasing player a summary of each side's current casualties (damaged and destroyed) and permanent losses in terms of men, guns, AFV's, vehicles, , and aircraft. A per turn listing of destroyed or disbanded units is also provided (26.3.2).

Display Production Screen (hotkey p): This screen displays production information for aircraft, ground elements, vehicles, ships, supply, manpower, and various other inputs to the production process. The phasing player will only be able to see information for their side (26.3.3).

Display Victory Point Screen (hotkey v): There are two different types of victory screens, one for campaign scenarios and one for all other scenarios. Both types of victory screens provide a running tally of current victory points, to include displays how victory points are earned for each side during a scenario (26.3.5).

Display Weather Screen (hotkey w): The weather screen displays the prevailing weather conditions graphically superimposed on the map area and provides link to the dominating weather conditions table (26.3.6). Allows player to toggle on ground weather, air weather, weather zones or road system levels on the map by clicking to the left of each of the main text headers for these items.

Display Air Doctrines Screen (hotkey d): The air doctrines screen lists each air command and displays by tabs the applicable current settings for each air doctrine (ground support, bomb city, ground attack, recon, air superiority, and naval patrol). The player can use the air doctrines screen to change settings for each air command and access the specific air doctrines for that air command. (26.3.7)

Display Air Directives Summary (hotkey Shift-d): The air directives summary screen lists the current air directives by air command. Air directives in this screen can be accessed and edited during the air directive planning phase (5.3.1).

Display Unit Reinforcement and Withdrawal Screen (hotkey i): This screen lists reinforcements and withdrawals for the phasing player (26.3.9).

Display Axis Garrison Status (hotkey Shift-j): Axis player only. The garrison screen lists Axis garrison requirements by occupied area as well as partisan activity. The screen lists the different garrison areas on the left (and on the right side are the upper left and lower right hexes for the rectangle that encompasses the area). The CV value is CV value of the Axis units in the area, and Req is the required, with the Req% being the percent of required in the area. Next lists the date when the garrison is going to change, and the garrison values that it will change to on that date. Units lists the number of units in the area. City lists the cities that must be garrisoned and the CVs in the city and the letter S if a security unit is in the city (so 10-S means there are both 10 CV in the city and a security unit). Partisan Activity is a value that represents how much activity there is, with 10 being the minimum in an active partisan area (one that is fully garrisoned). The higher the number the more the partisan activity.

Display Commanders Report Screen (hotkey c): This screen is a multi-tabbed list of information on units, leaders, equipment and battalions that can be sorted and filtered in numerous ways. In addition, many unit settings can be changed for both individual units and groups of units using this screen (26.2).

Display Logistics Phase Event Log Screen (hotkey Shift-e): Provides information on numerous events that have occurred during the most recent logistics phase as well as reporting on some actions that occurred during the previous action phases (26.3.13).

Display Metrics Screen (hotkey Shift-m): Allows players to graphically display a variety of information from the five main areas of victory points, order of battle, air execution, production, and the eastern front.

Display Airborne Planning Screen (hotkey Ctrl-a): Displays available airborne force and available air transport. Lists on map airborne combat units, their current TOE percentage and their current load cost (for an airborne drop) as well as their prep status. Also lists available transport total carry capacity (in tons) of ready aircraft.

V1.01.01 – 30 September 2015

Changes made to the air game rules that are documented in the OnePageGuide 4b:

Added detailed info regarding aircraft losses into the supply event log in the air execution section, which is now exported (all air execution data) after air execution into a txt file in the dat/saves/logs folder.

v1.01.20 – 1 February 2016

Hooked Show Air Directive Target toggle functionality (and button on top menu) to show NO AD targets/All AD targets/Only active ADs

5.1.2.3. ADMINISTRATION TAB

The following screens are included in the Administration tab toolbar:

Quit and Exit to Main Menu (hotkey Shift-q): Exits the current scenario and returns the player back to the main menu screen (3.3). Note that the computer will ignore a click on this button or its associated hot key when the computer AI is conducting its turn. The player must use the title bar close button (X) in the upper right corner to exit the program during the computer AI turn, or type Shift-X to end continuous play (there may be a long delay as the AI may finish its move first before returning control to the player). There is no way to return to the main menu once the AI is processing its turn.

Show Preferences Screen (hotkey Shift-p): Allows the player to review and change the user and map preferences (3.3.4, 3.3.5).

Show Game Options Screen (hotkey Shift-g): Displays the Game Options Screen and allows the player to change options if not locked out due to PBEM mode (3.3.3).

Show Save Game Screen (hotkey Shift-s): Allows the player to save the current scenario (26.3.11). Note that save game names are limited to 30 characters.

Show Hotkey List (Shift-h): Displays the complete list of hotkeys available (3.2.1).

5.1.3. SOFT FACTORS

This button, which is located on the far right in the same row as the menu tab toolbars, determines one of seven different factors to be displayed in the left corner of the unit counters. Selecting the button or hotkey 's' will toggle between viewing an indication of the current Morale, Experience, Supplies, Fuel, Ammo, Supply Priority, or number of support units attached to the units. Note that for HQ units, the information displayed is only for the HQ unit itself, not for the units that report to it. The player can also choose to view none of these items. A colour triangle will appear in the left hand corner of each unit counter to indicate the status of the unit with regards to the selected factor as follows:

SOFT FACTOR SUMMARY		COLOR CODE				
Symbol	Soft Factor	Bright Green	Dark Green	Yellow	Orange	Red
	Experience	>85%	71-85%	56-70%	41-55%	<41%

Supplies	>85%	71-85%	56-70%	41-55%	<41%
Fuel	>85%	71-85%	56-70%	41-55%	<41%
Ammo	>85%	71-85%	56-70%	41-55%	<41%
Supply Priority	4	3	2	1	0
Morale	>85%	71-85%	56-70%	41-55%	<41%
Number of Support Units attached to a Combat Unit	0	N/A	1	2	3
Number of Support Units attached to a HQ Unit	0	1-6	7-12	13-18	19+
No Soft Factor Selected	N/A	N/A	N/A	N/A	N/A

5.1.4. MODE TOOLBARS

There are two different versions of the Mode Toolbar, the Air Planning Phase Mode Toolbar and the Action Phase Mode Toolbar. The majority of the buttons in these toolbars allow the player to select the different modes used to plan air directives or conduct actions in the map area. Only one mode can be selected at a time, to include the Battle Locator mode, which provides information only. The mode currently selected will be displayed to the far right in the same row as the three menu tabs.

5.1.4.1. AIR PLANNING PHASE MODE TOOLBAR

No Air Directive Selected (hotkey F1): Default standard mode that allows the player to move around the map and select, though not move, units during the air planning phase. If Map Information Tab 'Show air directive targets' button (Shift-y) is selected, all active Air Directives will be graphically displayed.

Ground Support Air Directive (hotkey F2): Mode used to manually add new or modify existing ground support air directives by accessing an Air HQ unit listed in the right hand unit bar, If Map Information Tab 'Show air directive targets' button (Shift-y) is selected, all active Ground Support Air Directives will be graphically displayed.

Ground Attack Air Directive (hotkey F3): Mode used to manually add new or modify existing ground attack air directives by accessing an Air HQ unit listed in the right hand unit bar, If Map Information Tab 'Show air directive targets' button (Shift-y) is selected, all active ground attack Air Directives will be graphically displayed.

Strategic Bombing Air Directive (hotkey F4): Mode used to manually add new or modify existing bomb city air directives by accessing an Air HQ unit listed in the right hand unit bar, If Map Information Tab 'Show air directive targets' button (Shift-y) is selected, all active bomb city Air Directives will be graphically displayed. When Strategic Bombing Directive is enabled or when the Toggle Factory Locations is on, various symbols will be displayed on the map area for all the factories in towns, cities and urban areas. These symbols are color coded by damage percentage with green for no damage, yellow for 1-50 percent damage and red for 50-99 percent damage.

Air Recon Air Directive (hotkey F5): Mode used to manually add new or modify existing air reconnaissance air directives by accessing an Air HQ unit listed in the right hand unit bar, If Map Information Tab 'Show air directive targets' button (Shift-y) is selected, all active air reconnaissance Air Directives will be graphically displayed.

Air Superiority Air Directive (hotkey F6): Mode used to manually add new or modify existing air superiority air directives by accessing an Air HQ unit listed in the right hand unit bar, If Map Information Tab 'Show air directive targets' button (Shift-y) is selected, all active air superiority Air Directives will be graphically displayed.

Naval Patrol Air Directive (hotkey F7): Mode used to manually add or modify new naval air directives by accessing an Air HQ unit listed in the right hand unit bar, Naval Air Commands, for example RAF Coastal Command, will normally automatically fly Naval Patrols without an air directive, but Naval Patrol Air Directives can be manually added to other Air HQ units. If Map Information Tab 'Show air directive targets' button (Shift-y) is selected, all manually added Naval Patrol Air Directives will be graphically displayed.

Air Transfer Mode (hotkey F10): Mode used to transfer air group units between on-map air base units (5.3.10). When in Air Transfer Mode the number of air group units at each air base unit is displayed on the map.

Display Air Doctrines Screen (hotkey d): The air doctrines screen lists each air command and displays by tabs the applicable current settings for each air doctrine (ground support, bomb city, ground attack, recon, air superiority, and naval patrol). The player can use the air doctrines screen to change settings for each air command and access the specific air doctrines for that air command. (5.4.6)

Display Air Directives Summary (hotkey Shift-d): The air directives summary screen lists the current air directives by air command. Air directives in this screen can be accessed and edited during the air directive planning phase.

Toggle Air Execution Phase Detail (hotkey Shift-i): Same as the User Preference setting (3.3.4). Determines the level of detail of the combat resolution report window during the air execution phase. There are four levels annotated by the number of aircraft symbols highlighted, with each providing additional detail. Values available are None, Low, Medium, and High. When None, then the

map does not recenter during the air phase for each event and no combat reports are shown. With Low, the map will recenter over each battle (bombing event, recon event, or interception event battle site) and you the red line with the path of the bombers and green lines with the path of the interceptors (if any) to the battle hex will be displayed. The Combat window will be shown if the combat resolution message level is 1 or greater (although recon battle sites will not be show at detail 1). More detail will be shown in Medium and High AD execution detail levels.

AI Move Air Units (hotkey Shift-a): Used to have the computer manage and move the player's air group units automatically (17.3.11).

AI Plot Air Directives (hotkey a): Displays the Automatic Air Directive Creation Screen (5.3.1).

Battle Locator Mode (hotkey F11): Information only mode that will display symbols over hexes where air missions and ground combat have taken place on the map. There are symbols for ground combat, partisan attacks, air to air combat, surrender, recon, air transport, strategic bombing (bomb city), naval air patrol (interdiction), and air to ground attack. Continuing to select the mode or hotkey will toggle between 3 different states: 1) show all battle sites, 2) show ground battle sites, 3) show air battle sites. There is also a filter function that can be accessed by selecting "Filter" under the Mode Selection display to the right of the menu tabs that allows the player to set up a Custom battle locator state. Selecting this brings up a list of filters for various types of ground and air combats. These filters are saved off. The number of battles of the type toggled in each hex is printed as a number in the lower right of the battle site icon. Selecting a specific hex will display the combat report window for any battles of the type selected in the toggle that have taken place in the location during that turn. For example, if Air Only was toggled, only air combat will be available in the combat report window. The list of units that have been retreated, routed or shattered will also include any fortification level reduction that occurred as a result of that battle (26.3.12). Selecting the 'Show Details' link will provide a series of tabs providing detailed reports of various aspects of the battle.

Go to East Front Screen (hotkey Ctrl-e): Axis player only. Displays the East Front Control screen in campaign scenarios where this feature has been enabled (23.0).

Execute Air Directives (hotkey F12): End Air Planning Phase and Execute Air Directives.

5.14.2. ACTION (MOVE) PHASE MODE TOOLBAR

Move Mode (hotkey F1): Mode used to conduct tactical movement of ground units, and ground battles (5.3.1).

Rail Mode (hotkey F2): Mode used for the strategic transport of ground units using the rail network (5.3.2).

Naval Transport Mode (hotkey F3): Mode used to for the strategic transport of ground units between friendly ports via water hexes (5.3.3).

Amphibious Transport Mode (hotkey F4): Mode used for the strategic transport of combat units from a friendly port to a coastal hex via amphibious assaults against enemy units (5.3.4).

Air Transport Mode (hotkey F9): Mode used to conduct air transport of supply and units (5.3.9).

Toggle Day/Night Air Mission On (hotkey Shift-n): This button will display when air transport mode has been selected. The default is day missions (sun symbol). When toggled to night (moon symbol), only air group units with Night mission or Night & Day mission selected in the air group unit detail window can conduct missions, to include any auto-interception by the non-phasing player's air group units (16.1.6).

Air Transfer Mode (hotkey F10): Mode used to transfer air group units between on-map air base units (5.3.10).

AI Move Air Units (hotkey Shift-a): Used to have the computer manage and move the player's air group units automatically (17.3.11).

Battle Locator Mode (hotkey F11): Information only mode that will display symbols over hexes where air missions and ground combat have taken place on the map. There are symbols for ground combat, partisan attacks, air to air combat, surrender, recon, air transport, strategic bombing (bomb city), naval air patrol (interdiction), and air to ground attack. Continuing to select the mode or hotkey will toggle between 3 different states: 1) show all battle sites, 2) show ground battle sites, 3) show air battle sites. There is also a filter function that can be accessed by selecting "Filter" under the Mode Selection display to the right of the menu tabs that allows the player to set up a Custom battle locator state. Selecting this brings up a list of filters for various types of ground and air combats. These filters are saved off. The number of battles of the type toggled in each hex is printed as a number in the lower right of the battle site icon. Selecting a specific hex will display the combat report window for any battles of the type selected in the toggle that have taken place in the location during that turn. For example, if Air Only was toggled, only air combat will be available in the combat report window. The list of units that have been retreated, routed or shattered will also include any fortification level reduction that occurred as a result of that battle (26.3.12). Selecting the 'Show Details' link will provide a series of tabs providing detailed reports of various aspects of the battle.

End this Turn (hotkey F12): Selecting this button ends the phasing side's player turn (4.1).

Undo Move (hotkey u): This button will appear on the mode toolbar when a ground unit in move (F1) or rail mode (F2) is eligible to undo its previous move (14).

Combat Unit Buildup and Breakdown (hotkey b): Select this button after selecting the hex containing combat unit(s) to build up or breakdown (7.5.3). Selecting the button again will reverse the action just taken.

Create Fortified Unit in Selected Hex (hotkey Shift-f): Creates a fortified zone combat unit (7.5.1). Select this button after selecting an eligible hex on the map where the fortified zone is to be built.

Auto Assign Unit(s) to Nearest Headquarters (hotkey g): Automatically attaches combat and headquarters units to the

nearest eligible headquarters unit while the units are selected in Move mode (F1) (7.8).

Go to East Front Screen (hotkey Ctrl-e): German player only. Displays the East Front Control screen in campaign scenarios where this feature has been enabled.

5.1.5. GENERAL INFORMATION AND CITY/AIRFIELD BOX

The right hand corner of the top panel has a number of ovals that provide game information. In addition, if a town, city, urban hex or hex with only an airbase unit is selected, its name will appear along with other information. The name can be selected to access the applicable City Detail window. The following information is provided from top to bottom and left to right:

Turn Date and Number: Displays the scenario turn number and the date of that turn.

City Name: Displays the name of the town, city, urban hex or air base unit currently selected. Though the name is not in blue text, it can be selected to access the City Detail window (26.3.28). If the hex requires an Axis garrison a number in parentheses next to the name will display indicating the percentage of the garrison requirement being met (18.2). An anchor symbol will be displayed if the town, city or urban hex is a port. An airfield symbol will be displayed if an air base unit is present in the hex. Selecting the airfield symbol will access the air base unit detail window.

Motor Pool/Shipping Pool/Rail Load MP: Displays the status of the phasing player's motor pool (20.1.4) or shipping pool (20.1.5). Displays the following info in most modes: vehicles in depots/vehicles needed in depots (vehicles in general pool). For example MP: 485k/465k (305k). If the number of operational vehicles is less than one third of need, then this text will turn yellow. If the number of operational vehicles is less than one quarter of need, then the text will turn red. When Naval Transport (F3) or Amphibious Transport (F4) mode is selected in the action phase, the Motor Pool area will display available shipping where T:# C:# shows either total transport and cargo ships available for the Western Allies or the number available in the applicable ocean (Atlantic or Mediterranean) for the Axis. When a unit is selected in Rail Mode (F2) in the action (move) phase, the Motor Pool area will display the SMP cost to entrain that unit (14.2.5).

Admin Points: The current number of administrative points (admin) held by the phasing player (12) is displayed in the bottom left hand oval. This number will change with each action that expends or gains admin points.

VP Ovals: Current victory points (VP) are displayed in the two ovals adjacent to the admin point oval. For non-campaign scenarios, to include the air campaign introductory scenario, the Axis total is displayed in the center oval and the Western Allied total is displayed in the right hand oval. In campaign scenarios, the VP's for the latest turn are displayed in the center oval and the total VP's for the campaign scenario (game) are displayed in the right hand oval.

5.2. THE MAIN MAP AREA

The majority of game actions will take place through interaction with the main map area and the displayed unit counters. As yet another reminder, generally, mouse left clicks will be used to select/deselect something, while mouse right clicks will be used to conduct an action, but there are exceptions that will be detailed below.

Even at maximum zoom out (zoom level 5), the entire map area will not appear on the screen. A jump map (hotkey "shift j") is provided to allow the player to quickly move to a different part of the map area by selecting in the desired vicinity. Units will be displayed as dots, with black for Axis and Red for Western Allies units. If Fog of War (FOW) is enabled, units with a zero detection level will not be shown. The Find Hex function (hotkey "h") can also be used to navigate to a specific hex on the map.

In addition to the various user preference settings (3.3.4) and map information tab buttons (5.1.2.1) that can modify the map display, the hex grid can be toggled on and off using the hotkey Ctrl-g.

V1.00.37 – 7 May 2015

Revised Map - Changed terrain in Africa in all scenarios (added some impassable hexes in several areas and new rough and impassable terrain near Tripoli). Renamed bocage terrain to bocage/polder terrain, and added bocage/polder terrain to the Netherlands. Although polder terrain has a different look on the map than bocage terrain, they have the same effects on movement and combat. These terrain changes will only exist in newly started games. Old games will retain the old terrain.

V1.01.37 – 25 May 2016

Improved map current hex cursor (should be better aligned with hex).

5.2.1. HEX POP-UP

Every hex in the map area will display a text box when the mouse cursor is located over it. This feature can be disabled by setting the hex pop-up delay to zero in the user section of the preferences screen (3.3.4). Enabling of various Map Information tab functions can increase the amount of information available, especially in hexes with depots and factories (5.1.2.1). The following information will be displayed (using default map preferences per section 3.3.5 unless otherwise noted):

Name: ID number and Name of town, city, or urban hex, population, the number of total AA guns and if it is a port (if applicable)

If the town, city, or urban hex has anti-aircraft support units attached, the number of total AA guns in the attached units will be displayed in parentheses (AA :#) next to the population. This information will not be displayed for the enemy side if FOW is

enabled (13.2).

For Temp Port (#) or Port (#), the # being equal to the maximum undamaged port level (number of factories) of the hex. Values range from 1-9.

Terrain Type Features: See map area legend in top left corner (6.2).

Hex Coordinates: Given as X, Y.

Country and Road Type: Lists name of the country and whether the roads in the country are poor, average or good (22.3.1).

Depot: Depot level, current number of vehicles (trucks), used and unused, at the depot, and total freight currently stored at the depot.

Rail: xxxx: xxxx: Displays in railyard hexes. The first number represents the amount of rail tonnage capacity remaining unused in the railyard. The second number reflects the damage adjusted amount of rail tonnage that can be moved by the railyards in the hex (set near the end of the logistics phase).

Logistics Freight: If the Map Info tab Logistics info (hotkey n) is toggled on, depot logistics freight information will be displayed in tons as follows:

Received: # - % where # is the freight received during logistics phase and % is the percentage of total depot capacity that was received.

Stored #(#) - % where # is the current freight stored, (#) is the amount of freight that was at the depot at the start of the logistics phase, and % is the percentage of capacity that was stored at the beginning of the logistics phase.

Sent Out: # is the amount of freight sent out from the depot during the current turn.

Capacity: # is the maximum amount of freight that can be stored at this depot.

Climate and Weather: Lists the hex climate zone, current ground and air weather conditions, and level of moisture, either water or snow (22.0)

Air Interdiction: Amount of air interdiction in a ground hex or air and naval interdiction in a sea hex for both Axis and Allied sides. Values range from 1-99.

Air Recon: Amount of tactical air reconnaissance that occurred in a hex for both Axis and Allied sides. Values range from 1-99.

Directional Locations: (Only displayed if the preference Show River/Rail info is enabled (3.3.5))

River hex sides bordering selected hex.

Any impassable hex sides bordering selected hex.

Rail lines going through hex.

Note that directional locations will be expressed using compass headings for each hexside clockwise from the hex vertex pointing at the top of the map area as follows: NE, E, SE, SW, W, and NW.

Points for Victory Objectives (Non-campaign scenarios): Information about points for victory objectives will be in the format xx/xxx, where the first number is the amount of points received by the applicable player every player turn for control of the hex and the second number is the amount of points the applicable player will receive for control of the hex at the end of the scenario. For example, a hex that displays 'WA Victory Points 10/400' will give the Western Allies player 10 points every player turn they control the hex and a separate 400 VP's if the Allied player controls the hex at the end of the scenario.

Fortification Level: Given as 0-5, with the percentage of completion towards the next level in parentheses. Also displays 'max fort level' value which is the highest the hex can reach given current conditions.

Hex Control and Rail Line Status: Hex control will be indicated by Axis, WA (Western Allies), or Neutral, which indicates contested water hexes. Hexes that are pending friendly will reflect control by phasing player (6.3). In the Action (Move) phase, if naval transport (F3) or amphibious transport (F4) mode is selected, then the impact of control of sea hexes on those modes of travel will be indicated as follows:

Friendly controlled - nothing displayed

Neutral - SHIPPING CONTESTED

Enemy controlled - SHIPPING HEAVILY CONTESTED

Enemy amphibious HQ unit and adjacent hexes - SHIPPING PROHIBITED

Operating rail line will just state 'Rail.' Inoperable rail lines will reflect percentage of damage (from 1 to 100).

Rail usage: Displayed in tons.

Hex isolated: If the hex is considered isolated (20.2.1).

Port and Water Hex Information:

Name: The name of the associated ocean, sea or lake zone for the port or water hex.

Factory Locations: If 'View Factory Locations' has been toggled on (5.1.2.1), then the hex pop-up will include information about the specific factories in the hex, to include, port, manpower, railyard, resources and other production factories. Factories that are not yet producing will be listed. Any factories with damage will have the percentage displayed in parentheses next to the number of factory points of that type in that location. Note that no unit info will be displayed if factory information has been toggled on.

Combat Unit Information: Unit Name (CV/Fortification Defense Modifier CV, Percent of TOE), MP = Current Movement Points, Support units directly attached to a combat unit will be listed just below that on map unit. If applicable, includes number of turns till withdrawal. If unit counter info map preferences is set to display garrison CV value, then applicable units will have the garrison CV value displayed after a 'G' (3.3.5). Will not display if View Units on Map button is toggled off (5.1.2.1).

Headquarters Unit Information: Unit Name, CU = Combat units attached, SU = Non-construction type Support units attached, MP = Current movement points. Will not display if View Units on Map button is toggled off (5.1.2.1).

Air Base Unit Information: Unit Name, Size (1-3), Capacity percentage in parentheses, Damage percentage. Below the air base unit is a list of attached air group units with name and number and type of ready aircraft. Unlike other units, this information, including air group unit data, will continue to display even if View Units on Map button is toggled off (5.1.2.1).

Rail Repair HQ Unit Information: Unit Name (Zero CV unit/Zero CV unit, Percent of TOE) MP = Current Movement Points, SP = Supply Path where number is distance to nearest railhead. Will not display if View Units on Map button is toggled off (5.1.2.1).

Combat Delay: Number of current combat movement delay points in the hex due to attacks in the same player phase (14.1.5)

MP: Displayed at the bottom of the hex pop-up if units are selected in a hex. When the cursor is on the selected hex, the number displayed will match the lowest value of remaining MPs of any unit in the hex. If the cursor is then moved to another hex, without deselecting the current hex, the 'MP' field will remain, but the number will change to match the number in the compass if 'show movement path' (3.3.5) is enabled and serves the same purpose of showing the anticipated MPs remaining for the unit that is expected to have the least number of remaining MPs upon moving to the hex the cursor is currently over.

Predicted Combat Initial CV Values: With at least one friendly combat unit selected, locating the cursor over an enemy unit that the friendly combat units are eligible to attack displays a possible battle icon (hasty or deliberate), the following text (values displayed are an example only) is added to the pop-up text:

Attacker CV: 45.1

Defender CV: 23.2

The predictor gives you the adjusted CV values of the units that accounts for all known factors (terrain, forts, dense modifiers, weather, etc.) with the exception of leader values. This value is fogged up for the enemy if FOW is on. Since hasty attack CV values are $\times 1/2$, this will be reflected in the total if a hasty attack is what is showing (i.e. shift key isn't held down for deliberate attack). The main advantage of this is that since it knows what hex is being attacked, all modifiers can be applied correctly based on target hex terrain and weather.

PLAYERS NOTE

The predictor is an important tool as it's the only way to know how a unit's Combat Values are going to be impacted by the terrain in the hex being attacked.

5.2.2. HEX SELECTION AND UNIT COUNTER BORDER COLOUR

Every hex on the map is selectable. The selected hex will remain selected and the player can move the mouse cursor over the rest of the map until another hex is selected. Empty selected hexes will be outlined and shaded blue. Empty hexes with a town, city or urban hex will also have the name appear in the 'General information and City Box' in the right hand corner of the top panel. Selecting the town, city or urban hex name will access its city detail window (26.3.28). Selecting a hex with units in it will not shade the hex, but the fill color in the unit type box will change to red.

V1.00.00 – 21 November 2014

Added a green border around newly arrived reinforcements on the map when the view unit modes button is toggled on (shift-r).

5.2.2.1 MOVEMENT MODE HEX SELECTION

For the phasing player, selecting a hex in one of the movement modes (F1-F4) with a unit present will also select that unit (5.3). If there is more than one unit in the hex, a single left click on the stack will select only the top unit. Repeated left clicks will select the next unit on the right unit bar and move it to the top of the stack on the map. Double left clicking on the stack or using the Space bar will select all the units in the stack. The on-map CV value for the current hex reflects the CV values of only the selected units. Each selected unit in the stack will be bordered in purple. In addition, other units in other hexes on the map and deselected units in the same hex (5.2.3) that have certain relationships to the selected unit(s) current chain of command will have border colors as follows:

Next Higher Headquarters Unit: Orange

Peers: Yellow

Those units that are also attached to that unit's next higher headquarters.

Subordinates: Blue or Red

Those units directly attached to the selected unit.

Blue if within 5 hexes of the headquarters unit that the unit is attached.

Red if they are greater than 5 hexes from their HQ unit (no restrictions). Exceptions to the above are regimental and brigade breakdown units. Breakdown units in other hexes belonging to the same original unit, for example 1/292 and 2/292 regiments from the 292nd Infantry Division, will have a border color of blue rather than the yellow normally associated with peer units.

In addition, in the Air Planning Phase, when setting a Ground Support air directive (F2), HQ unit counter outline colors will be displayed on the map as follows:

"orange" ground HQ unit supported by current GS directive

"purple" ground HQ unit supported by current air HQ

“red” ground HQ unit supported by other air HQ

“white” ground HQ unit with no direct GS directive. This includes both ground HQ units with no GS support and ground HQ units with HHQ having direct GS.

If both a next higher headquarters unit and one of its subordinate units are selected in the same hex, the border colors of units in other hexes will reflect the next higher headquarters rather than the subordinate unit. If there are units from multiple organizations in the same hex, all applicable units will be bordered.

Chain of Command shortcuts (3.2.2) can be used to navigate up, down and across unit attachments.

5.2.2.2. OTHER MODES HEX SELECTION

In Battle Locator Mode (F11), only hexes where ground combat or air missions have taken place may be selected to display combat results; the remainder of the map area, to include normal hex pop-ups, will be inactive.

5.2.3. UNIT BAR

Selecting a hex with units in it will display the unit bar on the right hand part of the game screen. The unit bar normally consists of a separate unit box for each unit in that hex. The exceptions, which will be described below, are the display of units when multiple hexes have been selected in Movement Mode (F1), the listing of air group units after selection of an air base unit while in Air Transfer Mode (F10), or the listing of Air HQ's while in an air directive planning phase mode. Note that stacking in a hex is limited to three units, no matter whether it is a combat or headquarters unit. If a unit is currently selected, its unit box will have a white outline and be indented. All units in the unit bar will also display a border colour per section 5.2.2 above. Selecting a blank part of the unit box will toggle unit selection. Units that are selected on the right unit bar when a battle begins remain selected at the end of the battle. The unit box provides the following information and buttons (Note differences between types of units):

Unit Name: Selecting will display unit detail window (26.3). The unit detail window can also be displayed by right clicking in a blank part of the unit box.

HHQ: Name of headquarters unit that unit is attached to and command range information in the format (x/xx) where the first number is the range in hexes of the unit from its headquarters unit and the second number is the range in hexes that the applicable headquarters unit can provide that unit with support squad Ground element support (7.7.4).

Selecting will shift map view to center on the headquarters unit and change selected unit to that headquarters unit.

Unit Graphic: Displays CV-MP mode with currently selected soft factor and movement status.

Movement status is in the small triangle located in the right corner of the unit counter. If a unit has not moved, then it will be a white triangle with a smaller black triangle inside. If the unit has moved and still has movement points remaining, there will just be a white triangle. If the unit has expended all of its movement points, there will be nothing in the right corner.

Supply Percentages: Lists supplies, fuel and ammo for combat and air base units. Lists supplies and fuel only for Rail Repair HQ units. For all other HQ units except Air HQ units, lists percentage of fuel and supply need of all the units that report to that HQ.

Command Points: Lists current number of command points of attached units/command capacity for the HQ (All HQ units except air HQ units).

Attached Air Group and Air Base Units: For Air HQ units only, displays aircraft graphic with number of attached air group units and airfield graphic with number of attached air base units. This is in place of command points and supply percentages displayed by other HQ units.

Current Strategic Movement Points (SMP) Available:

If unit is conducting rail or naval movement, static toggle button will be replaced with 'on train' or 'on ship' toggle button.

Current Railroad Repair Value (RRV): Rail repair HQ units only.

Railroad Repair Cost (RRC): Rail repair HQ units only.

Displays when Rail Repair HQ unit is in a hex with a damaged railroad, with a number that is the MP cost to repair the railroad.

Selecting RRC button will repair the railroad (14.2.2).

Unit Mode: Combat units only

Toggle between ready, reserve and refit mode. Unit status may be unready or depleted, in which case it can only toggle to refit mode.

Refit All On/Refit All Off: HQ units only, with exception of air HQ units.

Doctrine: For Air HQ units only. When selected, displays air doctrine screen for that HQ unit (5.3.2).

Number of Ready Aircraft/Number of Total Aircraft: Air base units only

The difference between the two numbers is the total number of damaged and reserve aircraft.

Static Toggle Button: If unit is in static mode, 'STATIC' will be displayed under unit graphic and unit mode button will be greyed out. If an already static unit is eligible to be reactivated, then the 'REACTIVATE' button will be displayed.

Men/Guns/AFV: Graphic summary of total number of men, guns, and armoured fighting vehicles (AFV) currently in the unit.

Includes any attached support units.

Air base units will display total number of fighter, bomber, and utility (transport and recon) aircraft in attached air group units.

Airborne Combat Unit Target and Drop Buttons: Target button is used to set the airborne drop hex for the unit and will change to display the coordinates of the current target hex and the current number of preparation (P) points. The target button will display the target hex and prep points once a target is selected, and can be pressed again to change the target.

The drop button will only display in air transport (F9) mode once the airborne unit has accumulated sufficient preparation time

to air drop.

Amphibious HQ Unit Target and Invade buttons: Target button is used to set the amphibious invasion hex for the amphibious HQ unit and combat units stacked with it and will change to display the coordinates of the current target hex and add text to display the current number of preparation (P) points once a target is selected, and can be pressed again to change the target. The invade button will display once the amphibious HQ unit has the minimum required 50 prep points. Selecting invade will take the map to F4 mode and is visible in other modes during the movement phase once the amphibious HQ unit has the required prep points.

Combat Unit Amphibious Preparation (Prep): Displays the current number of amphibious preparation points for the combat unit involved.

V1.01.31 – 9 April 2016

Interface change - Made the HQ unit selected when going to HQ from right panel.

V1.01.37 – 25 May 2016

Display Change - Adjusted unit names on counters. Removed suffixes - st,nd,rd. 26.1

5.2.3.1 MULTIPLE HEX AND AIR TRANSFER MODE UNIT BAR

If multiple hexes are selected in preparation for a battle, when the first additional hex is selected the unit bar will display all units using a smaller rectangular unit box for each that lists the unit name and its CV and remaining movement points. Only combat units will remain selected, which will be annotated by the display of the unit counter icon in the far left side of the rectangular unit box. Left clicking anywhere in the unit box but on the unit name will remove the unit counter icon from the unit box and deselect the unit. To re-select the unit, left click anywhere in the unit box but on the unit name in the rectangular unit box, which will select the unit and bring back the unit icon. Left clicking on the name of the unit or right clicking in the unit box will display the applicable unit detail window.

If an air base unit is selected while in Air Transfer Mode (F10), the unit bar will display a list of the air group units attached to the air base unit in smaller rectangular unit boxes. Inside the unit box will be the name and range of the air group unit. Highlighting the air group unit name with the mouse will display a text box with the air group unit name, name of the Air HQ that it is attached, type and number of ready/total aircraft and range of the unit. None of the air group unit's displayed will initially be selected. To select an air group unit, left click anywhere in the unit box but on the unit name. Verification of selection will be the display of the unit icon from the air base unit to which the air group unit is attached. Left clicking anywhere in the unit box but on the unit name will remove the icon and deselect the air group unit. Selecting the air group unit name will display that particular air group unit's detail window. Note that closing the air group unit detail window will display the air base unit detail window, which will also need to be closed to continue with the air transfer process.

5.3. USING THE INTERFACE TO CONDUCT ACTIONS IN THE AIR PLANNING PHASE

The majority of air missions are initiated by the phasing player through assignment of air directives and doctrines to air headquarters units during the air planning phase. The number of air directives an air HQ unit can be assigned is based on the leader's air and admin ratings. Though execution of air missions is conducted by the computer based on air directives; the player can determine the level of manual control of the planning process, from selection of overall priorities down to individual air directive details if desired. There are multiple interface tools available, to include the automatic air directive creation screen, the air doctrine screen, the air directive summary screen and the individual air directive buttons on the air planning phase mode toolbar.

V1.01.12 – 6 November 2015

Added a new way to browse/edit Air Directives on the map:

- a. When you select "show air directive targets" mode (shift-y), it is possible to move mouse over the text which will create selection, by marking text and square yellow.
- b. AD name will blink if has no valid targets or no available aircraft/groups.
- c. It will display all AD details as live map text, including no fly codes.
- d. If show aircraft icons is enabled it will show the active aircraft for this AD
- e. When clicking on text in air planning mode it will bring it to the particular AD edit mode
- f. When you right click the map in AD edit mode it will exit to the HQ selection screen (in the same way as various detail (ex. unit, air group) screens can be exited)

Clicking AD name after air execution will enable AD battle display filter and switch to battle display mode. To disable right click or left click the AD name.

5.3.1. AUTOMATIC AIR DIRECTIVE CREATION SCREEN (HOTKEY A)

The purpose of this screen is to allow a player to quickly give objectives to his air forces, and then have the AI create a set of air directives that will attempt to carry out those objectives. Once the objectives are set, the AI can be told to create a set of Air Directives based on the objectives. The player can then view these directives in the air summary screen (manually adjusting any directives they wish and/or deleting or creating additional directives), exit to the map, or proceed directly to execute the air directives. At any time during the air planning phase the player may press the Automatic Air Directive Creation Screen button ('a' hotkey) to return to this screen and adjust the objectives and create a new set of air directives.

Details: At the start of each turn, the player is taken to the Automatic Air Directive Creation Screen (from this screen the player may toggle off the option to have the turn start with this screen). The player will see Tactical Air North Europe and Tactical Air Mediterranean. These give objectives to the air forces that are operating in Northern Europe and Southern Europe/North Africa respectively. The Allied player will additionally see sections for Strategic Air Day and Strategic Air Night. Strategic Air Day sets objectives for the Allied Strategic Air Forces (Strategic Air Force, 8th US Air Force and 15th US Air Force) and Strategic Air Night sets objectives for RAF Bomber Command. If the Allied player is planning on conducting an amphibious invasion in the movement phase, then the player is advised to toggle on the appropriate Amphib Support toggle (North and/or South) as this will set certain objectives that will result in air directives designed to support an amphibious landing. At the bottom of the screen there is also an option to reset all objectives to none, which will also toggle any amphibious support.

For Tactical Air North Europe and Tactical Air Mediterranean, the player has the option of setting the priorities for Ground Support, Air Superiority, and Ground Attack (by ground attack target type). These can be None(N), Low(L), Medium(M), or High(H). The exact target locations for the Air Superiority and Ground Attack Directives will be selected by the AI by evaluating the frontline (or the invasion target hex) and determining the key area to be supported. Recon directives will also be set up to support these operations.

The Strategic Air Day section allows the player to set target type priorities for the Air Forces that generally conduct daylight strategic bombing. The player may also instruct either the Northern or Southern forces to create ground attack directives by setting Ground Attack North or South to something other than None. If this is done, a ground attack types menu appears which allows the player to set ground attack target types for the daylight strategic air forces. The Strategic Air Night section allows the Allied player to set target type priorities for the RAF Bomber Command, the one Air Force that flew almost exclusively at night. This section functions exactly like the Strategic Air Day section.

Air Transport and the Coastal Air Forces (which automatically fly naval air patrol) do not operate under air directives, so are not affected by any objectives set in the Automatic Air Directive Creation screen.

In non-campaign scenarios where only a portion of the map is utilized and some air forces are not present, the screen display will be adjusted accordingly as follows:

If the map area SE Limit Y coordinate <231, Tac Air Med will not be displayed for either side. If the map area SE Limit Y>230, then Tac Air North Europe will not be displayed for either side and Strategic Air Night will not be displayed for the Western Allies.

Players also have the ability to toggle off the influence of the screen on each of the four areas (Tac NE, Tac Med, Strat Day, Strat Night). If an area is toggled off it will not delete existing or create new Air Directives for those Air HQ allocated to those areas. The default setting has all areas checked.

The player may select the "AI MANAGE AIR" link to have the computer automatically move/manage air units/bases (5.3.13).

Once a player has set the objectives, they should select "SET AIR DIRECTIVES" and the AI will create a set of air directives. Note that this will remove any prior directives that have been issued. Otherwise, all air directives remain in force until the player cancels or edits them. The player may then press "SUMMARY" to view these directives in the Air Summary screen, press EXECUTE to exit the air planning phase and resolve air action, or press the X (exit) button to be taken to the map. From the map the player may view the situation, or make manual adjustments to any of the air directives. Once done, the player should press the Execute Air Directives button (F12) to move to the air execution phase.

Whenever a change is made to the air mission priorities on the "a" screen, the 'EXECUTE' option is removed until the player selects Set Air Directives again.

Once the air execution phase has completed, the header title on the screen for the Air Directive Summary Screen changes to 'Air Execution Phase Summary', and the summary screen now displays the results from the air execution phase. The phasing player will have to wait until the next turn and the start of the air planning phase to view and edit existing air directives.

PLAY NOTE

Air Doctrines are never deleted automatically, even if they are no longer effective – including if the targets have been overrun by friendly units or controlled by the Soviets. The AI will never set up bad ADs, however, so players relying on the AI to create their air directives should periodically (if not

every turn) have the AI reset it's ADs using the AD creation screen priorities.

5.3.1.1. AUTOMATIC AIR DIRECTIVE CREATION SCREEN AIR FORCE ALLOCATION

Below is a list of the Type 2 and 3 Air HQ units, their initial location (North or South) and the applicable sections of the air directive creation screen whose objective settings will be used to issue them air directives.

Allies South:

Tactical Air Force (1)
Malta Air Command (1)
Strategic Air Force (2)
15th US Air Force (2)

Allies North:

8th US Air Force (2)
RAF Bomber Command (3)
RAF Fighter Command (4)
2nd RAF Tactical Air Force (4)
9th US Air Force (4)

Axis South:

Luftflotte 2 (1)
Italian Luftwaffe Command (1)
All Italian Air Fleets (1)

Axis North:

Luftflotte 3 (4)

Notes

- (1) These air forces are impacted by Tactical Air Mediterranean objectives.
- (2) These air forces are impacted by Strategic Air Day objectives.
- (3) This air force is impacted by Strategic Air Night objectives.
- (4) These air forces are impacted by Tactical Air North Europe objectives.

For Axis Corps level (type 4) Air HQ units, their air group unit assets will be included in the air directives created by the higher level air command HQs to which they are attached. Note that any Corps level air HQ unit air directives will be deleted whenever new air directives are created on the Automatic Air Directive Creation Screen.

For the Western Allies, Air forces in the South will be impacted by the amphib support south, and ground attack south (for Strategic Air Day/Night forces). Air forces in the north will be impacted by the amphib support north, and ground attack north (for Strategic Air Day/Night forces).

The following air forces will never have any automatic air directives created or deleted for them:

Coastal Air Force (1)
RAF Transport Command
RAF Coastal Command (1)
IX Troop Carrier command
Luftflotte Reich

Note

(1) Most air group units attached to Coastal commands are limited to flying naval patrol mission only, so most if not all of those air group units will be flying automatic naval patrol missions. Air group units attached to Coastal Commands that are not set to Naval only may be issued air directives and may be attached to other air HQ units.

5.3.2. AIR DOCTRINE SCREENS

Summary: The purpose of these screens is to set various general mission parameters for each air headquarters for each type of air directive. The summary screen can be accessed from the info screens menu tab toolbar, hotkey 'd', and the individual air headquarters air doctrine screen can be accessed from the air doctrine summary screen by selecting an air headquarters from the list on the left hand side of the screen, or by selecting the hex where an air HQ unit is located on the map and then selecting the 'Doctrines' button for that unit in the right hand unit bar.

Details: For summary screen, select one of seven air directive tabs; ground support, bomb city, ground attack, recon, air superiority, naval patrol, or pilots. Applicable parameters can be changed for a particular air headquarters unit listed on the left hand side by left clicking on the parameter and either toggling through the options or entering the desired number in the pop up text box. For the schedule column, toggle white for mission to be conducted on that day, toggle grey to not have a mission that day.

For an individual air HQ screen, the top part provides the same parameter selections in a tabular format. In addition, the center section allows the player to toggle mission priorities for ground attack and bomb city air directives for that air HQ. The bottom section allows the player to set the changed air doctrine for that air directive for either the selected air HQ or for ALL

air HQ's.

Parameters and applicable air directives:

Altitude (Alt): All. Sets cruising altitude for all aircraft and bombing altitude for bomber type aircraft.

Day or Night (D/N): Bomb City and Ground Attack. All other air directives are Day only.

Partial Escorts (Part Esc): Bomb City, Ground Attack, Recon, Naval Patrol. If set to Yes, escorts that cannot fly all the way to the target are counted as escorts for meeting the minimum and requested number of escorts for the strike. If set to No, then only escorts that can fly to the target will count for these purposes.

Follow Path (FPath): Bomb City, Ground Attack, Recon, Air Superiority, Naval Patrol. When Follow Path is set to Yes, the missions will fly along the flight path until they reach the last waypoint, and then fly from that waypoint to the specific target hex for the mission. When set to No, the mission will fly directly from the staging base to the specific target for the mission.

Friendly Hex Interdict (FHex): Ground Attack. If set to Yes will cause the target box to extend into friendly controlled hexes. This can be used to project interdiction into areas you currently control but which you expect the enemy may move through in the next player-turn.

Minimum Weather (MinWth): Sets minimum air weather conditions that must be met in order for the mission to launch. If set to All, then will fly in all weather conditions, otherwise, the level set is the minimum weather it looks for in order to fly a mission. Weather conditions are based on the weather on route to the target, over the take off base, stage base and target. Actual weather can be very poor, poor, fair, good, and excellent. Default is Poor, so missions will initially not be flown in very poor weather.

Intensity (Intens): Bomb City, Ground Attack, Recon, Naval Patrol. The Intensity of action desired, equating to the number of missions that will be attempted to be flown into the target area. Intensity is calculated based on the air directive type. Medium intensity is the default, with high intensity attempting approximately twice as many missions and low intensity attempting approximately half as many missions.

Schedule (Sched): Bomb City, Ground Attack, Recon, Air Superiority, Naval Patrol. The seven days of the turn are shown as D1 to D7, indicating which days you want a mission to be flown. Toggle off the days you don't want missions.

Percent to Fly (Pct Fly): All. Indicates the percentage of an air group unit's aircraft that must be ready for the air group unit to be able to participate in any mission. This percentage is based on the air group unit's TOE, not the current number of aircraft present with the air group unit. Any setting over 100 will result in no air missions being conducted

Mission Aircraft Percentage (Mis Pct): All. Determines the number of aircraft that the computer will attempt to have participate in mission as a percentage of what the computer would normally attempt to send. For example, a setting of 50 results in the computer selecting air group units in an attempt to equal half the number of aircraft it would select in a notional mission. Note that for automatic air intercepts, the Air Superiority Mission Aircraft Percentage doctrine setting also controls the size of the automatic air intercepts that occur during the air execution phase as well as the enemy ground movement phase (17.3.6).

Escort Aircraft Percentage (Esc Pct): All. Determines the number of escorts for a strike mission based on a percentage of the number of strike aircraft in the mission. For example, at a setting of 50, the computer will select air group units in an attempt to have the number of escorts equal half the number of bombers.

Automatic Naval Patrol (AutoPtrl): Naval Patrol only. Determines whether air group units not set to naval patrol only mission may be automatically assigned to naval patrols. If set to 'Yes' they can be automatically assigned. If set to 'No' prevents the computer making such assignments for that Air HQ unit.

Pilots Tab: Allows the player to set for each Air Force HQ the experience level below which pilots will train while their air group unit is not set to Rest or Train. The value entered determines the experience the pilot must be below in order for the pilot to conduct training missions while the air group unit is otherwise actively flying combat missions (not set to train or rest). The starting default is 50 for all HQs. The pilots tab also shows the average experience by aircraft type for each HQ along with two numbers in parentheses, with the first being the number of pilots below the training experience threshold value and the second being the number of total pilots in that aircraft type category. Next to the Training level value in parentheses is the total number of pilots that will be training in that Air Force based on the current training level setting.

Train Experience (Train Exp): Located under the pilots tab, this allows the player to set for each Air Force HQ the experience level below which pilots will train while their air group unit is not set to Rest or Train. The value entered determines the experience the pilot must be below in order for the pilot to conduct training missions while the air group unit is otherwise actively flying combat missions (not set to train or rest). The starting default is 50 for all HQs.

5.3.3. AIR HEADQUARTERS MANUAL AIR DIRECTIVE PLANNING SCREEN

Select one of the air directive modes (F2-F7) to bring up a list of air headquarters that can be issued air directives. All of the air HQ's will list the number of aircraft assigned broken down by type: fighter/fighter bomber, bomber, and transport. Air HQ's that have air directives assigned will be annotated in red with #/#, where the first number is number of air directives assigned of the mode currently selected and the second number is total air directives of all types assigned. For example, if ground support air directive mode (F2) is selected, 1/6 indicates that air HQ has six total air directives assigned, with one being ground support. Select an air HQ from the unit bar to edit or assign an air directive. This brings up a four section screen in the unit bar. The right upper section displays the unit box for the selected air HQ. Below that is a list of the number of total and ready aircraft by type and model that can be further broken down by air group unit, which can be selected to show location and the air group unit detail screen. Air group units attached to the current air directive will be shown with the ** symbol in front of their name. Air group

units already assigned to some other air directive have the * symbol in the front. An F added to the unit in the list of air groups in the right side display if the unit is in fighter role.

The left upper section first displays the current number of air directives assigned as well as the maximum number of air directives that air HQ unit can be assigned. It then lists all currently assigned air directives of any type and adds an asterisk entry at the bottom for assigning a new air directive of the current mode selected. The active air directive, either existing or new, is marked by a <<< symbol. An existing air directive can be deleted by selecting the [x] to the left of it or it can be selected to make it the active air directive. If the selected air directive is of a different mode than the mode currently selected, the mode will change automatically. Selecting the new air directive allows the player to set as desired. This is done in the lower left section, which has tailored settings for each type of air directive, to include advanced options that can be accessed by selecting the symbol ^^^ __^^^ that turns yellow when the mouse hovers on it. Once the player has completed setting the air directive, the 'CONFIRM' button is selected to assign the air directive to the air HQ.

A new Air Directive template won't be created if another unconfirmed AD exists for the same air HQ.

Each air HQ can be assigned ADs equal to the leader's air+admin ratings divided by two and rounded down, with a minimum value of 4. If an air HQ unit ends up with more ADs than it is allowed, those ADs over the limit will not execute any missions and the AD will be displayed in red text in the interface.

NOTE

The easiest way to make selected changes to an air directive is the go to the Air Summary Screen, and click on the specific air directive in the list that will be changed. This will take the player directly to the air directive edit mode for that air directive. Once a directive has been edited, click on the Air Summary button (shift-d) to go back to the Air Summary screen where another directive can be selected for editing.

V1.00.29 – 19 March 2015

Added ability to have more than 23 air HQs in scenarios (added scroll bars).

5.3.4. MANUAL AIR GROUP SELECTION

The default mode for air group unit selection is AUTO, which allows the computer to select among all air group units eligible to fly the air directive. This mode specifically reduces the capability of air group units assigned air superiority air directives using AUTO selection (17.3.6). For all of the air directive modes (F2-F7), the player has the option to manually select the air groups for a specific air directive. After selecting an air directive, the player then selects the highlighted link in the "GROUPS" row. This will display two lists (the top list is Assigned Air Groups and the bottom list is Available Air Groups). Each of these is further divided into 3 groups, mission AG, escort AG and inactive AG (those unable to perform the mission, these are also greyed out and if the no fly option is selected the reason(s) they can't fly are shown in red (5.3.4.4). There are six columns, each of which are selectable and can be sorted. They are air group unit name, number of ready aircraft in the air group unit, aircraft name, current range of air group units, type of aircraft, and day/night setting, which can be toggled between settings (8.1.2). Selecting an air group unit will locate the air group unit on the map and center the map on it while selecting it again will open the air group detail window. To add an air group unit, select the + next to the name, to remove it press the -. The player also has the option to select links that assign all air groups or remove all air groups from the air directive. Air group units attached to the current air directive will be shown with the ** symbol in front of their name. Air groups already assigned to some other air directive have the * symbol in the front. Manually selected air group units will not be cleared if the air directive's type (i.e. ground attack) is changed. They will remain selected for the new type of air directive, although the player will have to set up the new air directive with basic info such as target hex, etc. before they will see the air group units listed as being selected. As part of the manual selection process, air group unit load outs can also be tailored by accessing the air group unit detail window (26.3.19). The load out can also be adjusted for multiple air group units with the same model aircraft, either for all in the entire air OOB, by those manually assigned to the same type of air directive (ex. GND SUPPORT) or those attached to the same air base unit or air HQ unit.

V1.01.12 – 6 November 2015

31. Added a text button on the selected air HQ when creating an AD, which is used to zoom out and center on the air HQ.

5.3.4.1. FIGHTER BOMBER SETTINGS

There is a special coding for the Fighter Bomber types. FB-F is a FB set to fighter and trained as fighter. FB-F* is a FB set to fighter but trained as bomber. FB is a FB set to bomber and trained to bomber. FB* is a FB set to bomber, but trained as a fighter. The player can select the current FB setting to toggle to/from Fighter and Bomber.

An air group unit that is not able to reach a center of the target area is considered to be out of range. It could be that part of

the area will be shaded, but it will report 0 AC available.

5.3.4.2. AIR GROUP UNIT TRANSFER FUNCTION

Once an air group unit is selected in the manual selection list and its name is displayed in red, holding down the ctrl key will enable air transfer mode (F10) on the map. Right-clicking on an air base unit will move the selected group to that airfield. This feature is also available when the air group units are set to Auto selection by selecting the air group units name in the far right of the display and following the same steps.

5.3.4.3. UNAVAILABLE AIR GROUP UNIT DISPLAY OPTIONS

There are several options at the bottom of the screen that can be checked on or off: No Fly Info, Incompatible Types, Assigned Air Groups. When checked, No Fly Info displays the reasons the groups can't fly, Incompatible Types will include in the display air groups that are incompatible for the current mission and Assigned Air Groups will include in the display air groups that are assigned to other missions, which will be marked with an *.

5.3.4.4. NO FLY CODES

These codes will be displayed if the NO FLY INFO option is selected (5.3.4.3). Up to five of the below codes may be listed per air group unit:

NO READY AC

INCOMPATIBLE AC TYPE

INCOMPATIBLE DAY/NIGHT SETTING

LOW AMMO

LOW FUEL

OUT OF RANGE

TOO HIGH ALTITUDE

NOT ENOUGH READY AC (PCT TO FLY)

BAD WEATHER

NAVAL ONLY AIR GROUP

NO FREE MILEAGE

INCOMPATIBLE FB MISSION SETTING

5.3.5. NO AIR DIRECTIVE SELECTED MODE (F1)

Map viewing mode. This is the default selection at the beginning of the air planning phase and is the only mode that allows the player to select units on the map and access their information in the right unit bar. In all other modes, the right unit bar is used to edit air directives or transfer air units.

5.3.6. GROUND SUPPORT AIR DIRECTIVE MODE (F2)

Ground Support is used to provide ground formations with direct air support during ground attacks (17.3.2). Forces assigned to this directive will fly during ground combat in support of ground units that are in the chain of command of the target HQ unit. Note that ground support air directives will be inactive if ground support is toggled off (hotkey x) during the Action (Move) phase. Current ground support status will be annotated in the space to the right of the menu tabs as either GS-on (directives active) or GS-off (directives inactive).

Summary: Select Ground Support (GS) Air Directive mode (F2) (5.3.3). Select Air HQ unit to be issued ground support air directive in the right hand unit bar section. Select ground HQ unit to be provided GS either from the map or from the list of ground HQ unit in the right hand bar. If desired, manually select air group units (5.3.4) and/or change air doctrines (5.3.2). When Setup Air Directive and any desired changes to Advanced Options are complete, select "CONFIRM" to assign the air directive.

Details:

1. For a new Ground Support Directive:

Select Ground Support Air Directive Mode (F2).

Select Air HQ to be issued ground support air directive. A new "**GND SUPPORT" will be displayed and selected as annotated with "<<<." A "Set up Air Directive" will be displayed in the lower left hand side listing TYPE <GND SUPPORT> and GND HQ <Select HQ to support>.

Select Ground HQ to be supported. There are two methods, right hand unit bar or on map.

The right hand bar left lower side lists all ground HQ units eligible for ground support in hierarchal order (select [+] or [-] to view or hide subordinate HQ) and their current ground support status as follows:

Ground HQs with two asterisks (**) are those who are already have GS from current Air HQ.

Ground HQs with one asterisks (*) are those who are supported by GS directives from other Air HQs.

Ground HQs shown in green are "in support", because upper level HQ has GS AD.

Ground HQs shown in red are with no "GS".

For ground HQ units that already have direct GS directives (asterisked), select to change that air directive to the current Air HQ.

For ground HQ units that do not have direct GS (red or green font) select to assign direct ground support from the current Air HQ.

For the on map method, when setting a Ground Support directive HQ unit counter outline colors will be displayed on the map as follows:

"orange" ground HQ supported by current GS directive

“purple” ground HQs supported by current air HQ

“red” ground HQs supported by other air HQ

“white” ground HQs with no direct GS directive

For ground HQ units that already have direct GS directives (red outline on map), select to change that air directive to the current Air HQ. For ground HQ units that do not have direct GS (white outline on map) select to assign direct ground support from the current Air HQ. Note that when selecting from the map, if two eligible ground HQ units are in the same hex, the top ground HQ will be selected.

Once a ground HQ has been selected for direct GS, Set up Air Directive will expand to include the following options:

GROUPS: Default is AUTO selection of air group units. Select the link to manually assign air group units to the air directive and allow for the change of load outs for those same air group units (5.3.4).

WEATHER:

MIN FLY: Lists current ground attack air doctrine setting for that Air HQ, which is minimum air weather conditions that must be met in order for the mission to launch. If set to All, then will fly in all weather conditions, otherwise, the level set is the minimum weather it looks for in order to fly a mission.

CURRENT: Lists current weather conditions.

When Setup Air Directive is complete, select CONFIRM and then Yes to assign the completed ground support air directive to that Air HQ.

2. To edit a current Ground Support Air Directive:

All of the above settings can be changed by selecting the confirmed GND SUPPORT air directive and making changes as described previously. In addition, selecting Advanced Options and then “SET AIR DOCTRINE” will change the current air doctrine setting for that Air HQ to match those in the currently selected air directive.

NOTE

An HQ can only have one AF set to provide it ground support. If an AF is assigned to support an HQ that already has one AF assigned, the new directive will take effect and the older directive will be deleted.

An HQ with an AF providing support will not look to get ground support from another AF attached to a higher HQ. HQ's without direct support will look up their chain of command to get ground support.

5.3.7. GROUND ATTACK AIR DIRECTIVE MODE (F3)

Ground attack is used to slow and interdict enemy ground movement through an area, as well as causing losses to enemy units and logistics systems (17.3.3). The type of target can be prioritized for any/all of the following: railways, port, rail yards, ferries, interdiction (general area), air base units, and ground units. The first 5 will cause interdiction points to be created in hexes attacked, while the last two will make direct attacks on units but not create interdiction points. Units will target enemy ground units. Railways will target rail hex usage (to increase penalties for supply and unit movement along the rail). Ports will cause attacks on ports. Railyards will target railyard capacity (factories). Ferries will target ferry hexes. Interdict will cause general interdiction to be flown across the area. Several of these target types will cause interdiction points to be accumulated in hexes. These points will slow enemy movement, cause damage to enemy units moving through and in the hexes, and will cause enemy units extra disruption at the beginning of a normal ground combat. There is a cap on the movement penalty caused by air interdiction to motorized units moving in clear terrain. This maximum is +2 MPs per hex. Interdiction values on rail hexes add usage to slow rail movement through the hex.

Summary: Select Ground Attack Air Directive Mode (F3). Select Air HQ unit to be issued ground attack air directive. Go to map and left click on a hex to select desired target hex. If desired, manually select air group units (5.3.4) and/or change air doctrines (5.3.2). When Setup Air Directive and any desired changes to Advanced Options are complete, select CONFIRM s to assign the completed air directive to that Air HQ.

Details

1. For a new Ground Attack Directive

Select Ground Attack Air Directive Mode (F3).

Select Air HQ to be issued ground attack air directive. A new “*GND ATTACK” will be displayed and selected as annotated with “<<<.” A “Set up Air Directive” will be displayed in the lower left hand side listing TYPE <GND ATTACK> and TARGET <Select Target Hex>.

Go to map and left click on a hex to select desired target hex.

Set up Air Directive expands to include the following options:

TARGET:

Hex: Lists selected target hex “Hex(xxx,xxx).” Selecting that link reverts to previous display and allows player to change the

target hex.

Flight Path: The map will display a green line showing the path to the target, and a purple line showing the return path. The green hexes indicate the part of the path protected by escorts, while the purple hexes show hexes without escort on the path to the target. The waypoints on the paths can be adjusted. Left click selects green path waypoint (or both if in the hex) and right click select purple path waypoint. Once a path is selected, left click in hex to move waypoint(s) to the selected hex.

<PRI>: Selecting this brings up a target selection list with seven types of ground attack targets; Airfield, Unit, Railway, Port, Ferry, Interdict, and Railyard. For each type of target the player selects one of four priorities; Ignore, Low, Normal, and High. When target priorities have been set, select "DONE" to return to setup remainder of ground attack air directive. Initial settings are determined by current ground attack air doctrines for that air HQ unit (5.3.2).

S BASE: Staging base, which is an airfield above where all the air group units involved in a ground attack mission will rendezvous before proceeding on to the target. The computer will select a staging base each time the player changes the target hex. Selecting the S BASE link after the target hex has been set will allow the player to go to the map and select another staging base, which must be a hex with an air base unit present.

AREA: The target hex specified is the center of a box area in which ground attack missions will be flown. Set the radius of the box by selecting the number next to AREA. This can be set from 0 to 10 in the text box displayed, and indicates the amount added and subtracted to the X and Y coordinates to form the area. The number in parentheses that appears next to the number set by the player indicates the number of hexes in total that make up the target area. Note that this number may display zero if no air group units have been assigned to the mission yet. Like the flight path above, the target area is color coded with green hexes the part of the area that escorts can reach and the purple hexes the part of the area that escorts cannot reach.

DAY/NIGHT: Toggle the link to select day or night missions for this ground attack air directive. Initial settings are determined by current ground attack air doctrines for that air HQ unit (5.3.2).

INTENSITY: Toggle the link to select low, medium or high intensity for the air directive. Initial settings are determined by current ground attack air doctrines for that air HQ unit (5.3.2).

GROUPS: Default is AUTO selection of air group units. Select the link to manually assign air group units to the air directive and allow for the change of load outs for those same air group units (5.3.4).

WEATHER:

MIN FLY: Lists current ground attack air doctrine setting for that Air HQ, which is minimum air weather conditions that must be met in order for the mission to launch. If set to 'All', then will fly in all weather conditions, otherwise, the level set is the minimum weather it looks for in order to fly a mission.

CURRENT: Lists current weather conditions.

Advanced Options can be displayed by selecting "^^^_____^^^" and include:

SCHEDULE: The seven days of the turn are shown as D1 to D7, indicating days when a mission will attempt to fly. The player can toggle on (white) or off (grey) the days as desired. Initial settings are determined by current ground attack air doctrines for that air HQ (5.3.2).

STRIKE NUM: Select the link to manually set the number of air strikes per mission per day that will be attempted. This can be set from 0 (AUTO) to 999 in the text box displayed. If set to AUTO, then number of air strikes will be determined by the current intensity setting.

ALTITUDE: Select (-) to decrease or (+) to increase mission altitude in increments of 1000 feet. Initial altitude setting is determined by current ground attack air doctrines for that air HQ (5.3.2).

PRIORITY: Select (-) to decrease or (+) to increase the priority of the air directive. The Priority ranges from Very Low to Very High. The higher priority air directives are resolved (flown) first each day.

MIN AC(ESC): Select link to set the minimum number of bombers/fighter bombers and the minimum number of escorts that must be available in order for a mission to be launched. A text box for each type of aircraft will be displayed sequentially. As long as the minimum is available, a mission will be flown.

REQ AC(ESC): Select link to set the requested number of bombers/fighter bombers and the requested number of escorts that the player would like to have fly the mission if available. A text box for each type of aircraft will be displayed sequentially. If no player input, then REQ AC(ESC) will match MIN AC(ESC). If MIN AC(ESC) is available, a mission will be flown.

FOLLOW PATH: Toggle Yes or No. When Follow Path is set to Yes, the missions will fly along the flight path until they reach the last waypoint, and then fly from that waypoint to the specific target hex for the mission. When set to No, the mission will fly directly from the staging base to the specific target hex for the mission.

PART ESC: Toggle link to yes or no partial escorts. If set to yes, than escorts that cannot fly all the way to the target are counted as escorts for meeting the minimum and requested number of escorts for the strike. If set to no, then only escorts that can fly to the target will count for these purposes.

FHEX INTERDICT: Toggle Yes or No. Friendly hex interdiction (FHEX INTERDICT) if set to Yes will cause the target area box to extend into friendly controlled hexes. This can be used to project interdiction into friendly controlled hexes that the player anticipates the enemy may move through in the next player-turn. Note that FHEX INTERDICT will only display if the selected target area includes friendly controlled hexes.

When Setup Air Directive and any desired changes to Advanced Options are complete, select CONFIRM and then Yes to assign the completed air directive to that Air HQ.

2. To edit a current Ground Attack Air Directive:

All of the above settings can be changed by selecting the confirmed GND ATTACK air directive and making changes as described previously. In addition, selecting "SET AIR DOCTRINE" will change the current air doctrine setting for that Air HQ to match those in the currently selected air directive.

5.3.8. STRATEGIC BOMBING AIR DIRECTIVE MODE (F4)

The purpose of this mode, also displayed as bomb city, is to conduct air missions against town, city or urban hexes containing factories (17.3.4). The player can select the type of factories to bomb and can attack factories in a single hex or over a defined area that includes multiple town, city or urban hexes.

Summary: Select Strategic Bombing Air Directive Mode (F4). Select Air HQ unit to be issued strategic bombing air directive. Use city selection list or go to map and left click on a hex to select desired target hex. If desired, manually select air group units (5.3.4) and/or change air doctrines (5.3.2). When Setup Air Directive and any desired changes to Advanced Options are complete, select CONFIRM to assign the completed air directive to that Air HQ.

Details:

1. For a new Strategic Bombing Air Directive:

Select Strategic Bombing Air Directive Mode (F4)

Select Air HQ unit to be issued a strategic bombing air directive. A new "*BOMB CITY" will be displayed and selected as annotated with "<<<." A "Set up Air Directive" will be displayed in the lower left hand side listing TYPE <BOMB CITY> and TARGET <Select Target Hex>.

City Selection List: Below will be displayed a target list, that includes name of town, city or urban hex, types, number and current estimated damage level of factories (13.2.1), range in miles from the air force HQ unit, and PHOTO, which lists the number of turns since a strategic reconnaissance mission was conducted over the city to photograph damage results. The list can be filtered to display all or just certain types of factories. Selecting the name of a city will change the map view to the vicinity of the selected city. Note that selecting a city from the list will not select it as a target hex for the air directive. Targets must be selected on the map.

Go to map and left click on a hex to select desired target hex.

Set up Air Directive expands to include the following options:

TARGET:

Hex: Lists selected target hex "Hex(xxx,xxx)." Selecting that link reverts to previous display and allows player to change the target hex. The city selection list will display again.

Flight Path: The map will display a green line showing the path to the target, and a purple line showing the return path. The green hexes indicate the part of the path protected by escorts, while the purple hexes show the part of the path either without escort or that escorts cannot reach on the way to the target. The waypoints on the paths can be adjusted. Left click selects green path waypoint (or both if in the hex) and right click select purple path waypoint. Once a path is selected, left click in hex to move waypoint(s) to the selected hex.<PRI>: Selecting this brings up a target selection list with fourteen types of strategic bombing targets; Armored Fighting Vehicles (AFV), Aircraft, Port, Railyard, Manpower, Resource, Oil, Fuel, Heavy Industry (HI), Vehicle, Armament, V-Weapon, V-Weapon Launch, and U-Boat. Next to each target type is the number of factories in the target hex followed by the current damage to those factories in parentheses. For example Vehicle 45(48) indicates that target hex has 45 vehicle factories with 48 percent damage. Note that if the target hex is part of a multi-hex AREA attack (see below) that the number will include all factories in the defined area and that the damage will be the sum of all damage to that type of factory in the area. For each type of factory the player can select one of four priorities; Ignore, Low, Normal, and High. When target priorities have been set, select "DONE" to return to setup the remainder of the strategic bombing air directive. Initial settings are determined by current strategic bombing air doctrines for that air HQ (5.3.2). Hovering the mouse over the target hex will bring up a list of the current target priorities.

S BASE: Staging base, which is an airbase above where all the air group units involved in a strategic bombing mission will rendezvous before proceeding on to the target. The computer will select a staging base each time the player changes the target hex. Selecting the S BASE link after the target hex has been set will allow the player to go to the map and select another staging base, which must be a hex with an airbase unit present.

AREA: The target hex specified is the center of a box area in which strategic bombing missions will be flown. Set the radius of the box by selecting the number next to AREA. This can be set from 0 to 10 in the text box displayed, and indicates the amount added and subtracted to the x and Y coordinates to form the area. The number in parentheses that appears next to the number set by the player indicates the number of hexes in total that make up the target area. Note that this number may display zero if no air group units have been assigned to the mission yet. Like the flight path above, the target area is color coded with green hexes the part of the area that escorts can reach and the purple hexes the part of the area that escorts are not available or cannot reach.

DAY/NIGHT: Toggle the link to select day or night missions for this strategic bombing air directive. Initial settings are determined by current strategic bombing air doctrines for that air HQ (5.3.2).

INTENSITY: Toggle the link to select low, medium or high intensity for the air directive. Initial settings are determined by current strategic bombing air doctrines for that air HQ (5.3.2).

GROUPS: Default is AUTO selection of air group units. Select the link to manually assign air group units to the air directive and

allow for the change of load outs for those same air group units (5.3.4). Note that Fighter bombers can only be assigned as escorts for strategic bombing missions. They cannot be used to dive bomb strategic targets.

WEATHER:

MIN FLY: Lists current strategic bombing air doctrine setting for that Air HQ, which is minimum air weather conditions that must be met in order for the mission to launch. If set to All, then will fly in all weather conditions, otherwise, the level set is the minimum weather it looks for in order to fly a mission.

CURRENT: Lists current weather conditions.

Advanced Options can be displayed by selecting “^^^_____^^^” and include:

SCHEDULE: The seven days of the turn are shown as D1 to D7, indicating days when a mission will attempt to fly. The player can toggle on (white) or off (grey) the days as desired. Initial settings are determined by current strategic bombing air doctrines for that air HQ (5.3.2).

STRIKE NUM: Select the link to manually set the number of bombing raids per mission per day that will be attempted. This can be set from 0 (AUTO) to 999 in the text box displayed. If set to AUTO, then number of bombing raids will be determined by the current intensity setting. For example AUTO (1) indicates that at the set intensity, one bombing raid will be attempted per mission per day.

ALTITUDE: Select (-) to decrease or (+) to increase mission altitude in increments of 1000 feet. Initial altitude setting is determined by current strategic bombing air doctrines for that air HQ (5.3.2).

PRIORITY: Select (-) to decrease or (+) to increase the priority of the air directive. The Priority ranges from Very Low to Very High. The higher priority air directives are resolved (flown) first each day.

MIN AC(ESC): Select link to set the minimum number of bombers and the minimum number of escorts that must be available in order for a mission to be launched. A text box for each type of aircraft will be displayed sequentially. As long as the minimum is available, a mission will be flown.

REQ AC(ESC): Select link to set the requested number of bombers and the requested number of escorts that the player would like to have fly the mission if available. A text box for each type of aircraft will be displayed sequentially. If no player input, then REQ AC(ESC) will match MIN AC(ESC). If MIN AC(ESC) is available, a mission will be flown.

FOLLOW PATH: Toggle Yes or No. When Follow Path is set to Yes, the missions will fly along the flight path until they reach the last waypoint, and then fly from that waypoint to the specific target hex for the mission. When set to No, the mission will fly directly from the staging base to the specific target hex for the mission.

PART ESC: Toggle link to yes or no partial escorts. If set to yes, then escorts that cannot fly all the way to the target are counted as escorts for meeting the minimum and requested number of escorts for the strike. If set to no, then only escorts that can fly to the target will count for these purposes.

When Setup Air Directive and any desired changes to Advanced Options are complete, select CONFIRM and then Yes to assign the completed air directive to that Air HQ.

2. To edit current Strategic Bombing Air Directive:

All of the above settings can be changed by selecting the confirmed BOMB CITY air directive and making changes as described previously. In addition, selecting “SET AIR DOCTRINE” will change the current strategic bombing air doctrine settings for that Air HQ to match those in the currently selected strategic bombing air directive.

5.3.9. AIR RECON AIR DIRECTIVE MODE (F5)

The purpose of this mode is to conduct tactical aerial reconnaissance missions to increase detection of enemy units and, with FOW enabled, to conduct strategic aerial reconnaissance missions to increase the reliability of factory damage estimates from strategic bombing (17.3.1).

Summary: Select Air Recon Air Directive Mode (F5). Select Air HQ to be issued air recon air directive. Toggle STRATEGIC to NO (tactical air recon for detection of enemy units, to include air base units) or YES (strategic air recon to photograph bombing results on factories in town, city and urban hexes only). Go to the map area and left click on a hex to select desired target hex, which must be an enemy controlled hex. If desired, manually select air group units (5.3.4) and/or change air doctrines (5.3.2). When Setup Air Directive and any desired changes to Advanced Options are complete, select CONFIRM to assign the completed air directive to that Air HQ.

Details:

1. For a new Air Recon Air Directive:

Select Air Recon Air Directive Mode (F5).

Select Air HQ to be issued air recon air directive. A new “*RECON” will be displayed and selected as annotated with “<<<.” A “Set up Air Directive” will be displayed in the lower left hand side listing TYPE <RECON>, STRATEGIC YES/NO and TARGET <Select Target Hex>.

Toggle STRATEGIC to NO (tactical air recon for detection of enemy units, to include air base units) or YES (strategic air recon to photograph bombing results on factories in town, city and urban hexes only). Default setting is NO.

If toggled YES for strategic recon, then the City Selection list will display.

City Selection List: Below will be displayed a target list, that includes name of town, city or urban hex, types, number and current estimated damage level of factories (13.2.1), range in miles from the air force HQ unit, and PHOTO, which lists the

number of turns since a strategic reconnaissance mission was conducted over the city to photograph damage results. The list can be filtered to display all or just certain types of factories. Selecting the name of a city will change the map view to the vicinity of the selected city. Note that selecting a city from the list will not select it as a target hex for the air directive. Targets must be selected on the map.

Go to the map area and left click on a hex to select desired target hex, which must be an enemy controlled hex

Set up Air Directive expands to include the following options:

TARGET:

Hex: Lists selected target hex "Hex(XXX,XXX)." Selecting that link reverts to previous display and allows player to change the target hex, which must be an enemy controlled hex.

Flight Path: The map will display a green line showing the path to the target, and a purple line showing the return path. The green hexes indicate the part of the path protected by escorts, while the purple hexes show hexes without escort on the way to the target. The waypoints on the paths can be adjusted. Left click selects green path waypoint (or both if in the hex) and right click select purple path waypoint. Once a path is selected, left click in hex to move waypoint(s) to the selected hex.

<PRI>: Selecting this brings up either the ground attack target selection list for normal recon or the strategic bombing target selection list for strategic recon (17.3.1). For each type of target the player selects one of four priorities; Ignore, Low, Normal, and High. When target priorities have been set, select "DONE" to return to setup remainder of ground attack air directive. Initial settings are determined by current recon air doctrines for that air HQ (5.3.2).

S BASE: Staging base, which is an airbase above where all the air group units involved in an air recon mission will rendezvous before proceeding on to the target. The computer will select a staging base each time the player changes the target hex. Selecting the S BASE link after the target hex has been set will allow the player to go to the map and select another staging base, which must be a hex with an airbase unit present.

AREA: The target hex specified is the center of a box area in which air recon missions will be flown. Set the radius of the box by selecting the number next to AREA. This can be set from 0 to 10 in the text box displayed, and indicates the amount added and subtracted to the x and Y coordinates to form the area. The number in parentheses that appears next to the number set by the player indicates the number of hexes in total that make up the target area. Note that this number may display zero if no air group units have been assigned to the mission yet. Like the flight path above, the target area is color coded with green hexes the part of the area that escorts can reach and the purple hexes the part of the area that escorts are not available or cannot reach.

INTENSITY: Toggle the link to select low, medium or high intensity for the air directive. Initial settings are determined by current air recon air doctrines for that air HQ (5.3.2).

GROUPS: Default is AUTO selection of air group units. Select the link to manually assign air group units to the air directive and allow for the change of load outs for those same air group units (5.3.4).

WEATHER:

MIN FLY: Lists current ground attack air doctrine setting for that Air HQ, which is minimum air weather conditions that must be met in order for the mission to launch. If set to All, then will fly in all weather conditions, otherwise, the level set is the minimum weather it looks for in order to fly a mission

CURRENT: Lists current weather conditions.

Advanced Options can be displayed by selecting "^^^ ____ ^^^ and include:

SCHEDULE: The seven days of the turn are shown as D1 to D7, indicating days when a mission will attempt to fly. The player can toggle on (white) or off (gray) the days as desired. Initial settings are determined by current air recon air doctrines for that air HQ (5.3.2).

STRIKE NUM: Select the link to manually set the number of air strikes per mission per day that will be attempted. This can be set from 0 (AUTO) to 999 in the text box displayed. If set to AUTO, then number of air strikes will be determined by the current intensity setting.

ALTITUDE: Select (-) to decrease or (+) to increase mission altitude in increments of 1000 feet. Initial altitude setting is determined by current air recon air doctrines for that air HQ (5.3.2). See 17.3.1 for impact of altitude on air recon missions.

PRIORITY: Select (-) to decrease or (+) to increase the priority of the air directive. The Priority ranges from Very Low to Very High. The higher priority air directives are resolved (flown) first each day.

MIN AC(ESC): Select link to set the minimum number of reconnaissance aircraft and the minimum number of escorts that must be available in order for a mission to be launched. A text box for each type of aircraft will be displayed sequentially. As long as the minimum is available, a mission will be flown.

REQ AC(ESC): Select link to set the requested number of reconnaissance aircraft and the requested number of escorts that the player would like to have fly the mission if available. A text box for each type of aircraft will be displayed sequentially. If no player input, then REQ AC(ESC) will match MIN AC(ESC). If MIN AC(ESC) is available, a mission will be flown.

FOLLOW PATH: Toggle Yes or No. When Follow Path is set to Yes, the missions will fly along the flight path until they reach the last waypoint, and then fly from that waypoint to the specific target hex for the mission. When set to No, the mission will fly directly from the staging base to the specific target hex for the mission.

PART ESC: Toggle link to yes or no partial escorts. If set to yes, than escorts that cannot fly all the way to the target are counted as escorts for meeting the minimum and requested number of escorts for the strike. If set to no, then only

escorts that can fly to the target will count for these purposes.

When Setup Air Directive and any desired changes to Advanced Options are complete, select CONFIRM and then Yes to assign the completed air directive to that Air HQ.

2. To edit current Air Recon Air Directive:

All of the above settings can be changed by selecting the confirmed RECON air directive and making changes as described previously. In addition, selecting "SET AIR DOCTRINE" will change the current air doctrine setting for that Air HQ to match those in the currently selected air directive.

5.3.10. AIR SUPERIORITY AIR DIRECTIVE MODE (F6)

The purpose of this mode is to set up air missions where fighter type aircraft attempt to establish or maintain air control to minimize enemy interception of friendly air missions or to enable interception of enemy air missions (17.3.6).

Summary: Select Air Superiority Air Directive Mode (F6). Select Air HQ to be issued air superiority air directive. Go to map and left click on a hex to select desired target hex. If desired, manually select air group units (5.3.4) and/or change air doctrines (5.3.2). When Setup Air Directive and any desired changes to Advanced Options are complete, select CONFIRM to assign the completed air directive to that Air HQ.

Details:

1. For a new Air Superiority Air Directive:

Select Air Superiority Air Directive Mode (F6).

Select Air HQ to be issued air superiority air directive. A new "**SUPERIORITY" will be displayed and selected as annotated with "<<<<." A "Set up Air Directive" will be displayed in the lower left hand side listing TYPE <SUPERIORITY> and TARGET <Select Target Hex>.

Go to map and left click on a hex to select desired target hex.

Set up Air Directive expands to include the following options:

TARGET:

Hex: Lists selected target hex "Hex(xxx,xxx)." Selecting that link reverts to previous display and allows player to change the target hex.

Flight Path: The map will display a green line showing the path to the target, and a purple line showing the return path. Air superiority missions are considered unescorted, the hexes along the flight path will always be purple. The waypoints on the paths can be adjusted Left click selects green path waypoint (or both if in the hex) and right click select purple path waypoint. Once a path is selected, left click in hex to move waypoint(s) to the selected hex.

S BASE: Staging base, which is an airbase above where all the air group units involved in an air superiority mission will rendezvous before proceeding on to the target. The computer will select a staging base each time the player changes the target hex. Selecting the S BASE link after the target hex has been set will allow the player to go to the map and select another staging base, which must be a hex with an airbase unit present.

AREA: The target hex specified is the center of a box area in which air superiority missions will be flown. Set the radius of the box by selecting the number next to AREA. This can be set from 0 to 10 in the text box displayed, and indicates the amount added and subtracted to the x and Y coordinates to form the area. The number in parentheses that appears next to the number set by the player indicates the number of hexes in total that make up the target area. Note that this number may display zero if no air group units have been assigned to the mission yet. Air group units assigned to air superiority have to be able to reach all hexes within the target area. Like the flight path above, since air superiority missions are considered unescorted, the color coding of the target area will always be purple.

GROUPS: Default is AUTO selection of air group units. Select the link to manually assign air group units to the air directive and allow for the change of load outs for those same air group units (5.3.4). Note that Air Group Units selected under AUTO selection will not be eligible to intercept ground support and transport missions in the enemy movement phase (17.3.6)

WEATHER:

MIN FLY: Lists current air superiority air doctrine setting for that Air HQ, which is minimum air weather conditions that must be met in order for the mission to launch. If set to 'All', then will fly in all weather conditions, otherwise, the level set is the minimum weather it looks for in order to fly a mission.

CURRENT: Lists current weather conditions.

Advanced Options can be displayed by selecting "^^^ ____ ^^^ and include:

SCHEDULE: The seven days of the turn are shown as D1 to D7, indicating days when a mission will attempt to fly. The player can toggle on (white) or off (gray) the days as desired. Initial settings are determined by current ground attack air doctrines for that air HQ (5.3.2).

ALTITUDE: Select (-) to decrease or (+) to increase mission altitude in increments of 1000 feet. Initial altitude setting is determined by current air superiority air doctrines for that air HQ (5.3.2). Air superiority flights can gain altitude when intercepting enemy raids or joining defensive battles.

PRIORITY: Select (-) to decrease or (+) to increase the priority of the air directive. The Priority ranges from Very Low to Very High. The higher priority air directives are resolved (flown) first each day.

MIN AC: Select link to set the minimum number of fighters that must be available in order for a mission to be launched. A text box will be displayed. As long as the minimum is available, a mission will be flown.

REQ AC: Select link to set the requested number of fighters that the player would like to have fly the mission if available. A text box will be displayed. If no player input, then REQ AC will match MIN AC. If MIN AC is available, a mission will be flown.

FOLLOW PATH: Toggle Yes or No. When Follow Path is set to Yes, the missions will fly along the flight path until they reach the last waypoint, and then fly from that waypoint to the specific target hex for the mission. When set to No, the mission will fly directly from the staging base to the specific target hex for the mission.

When Setup Air Directive and any desired changes to Advanced Options are complete, select CONFIRM and then Yes to assign the completed air directive to that Air HQ.

2. To edit current Air Superiority Air Directive:

All of the above settings can be changed by selecting the confirmed SUPERIORITY air directive and making changes as described previously. In addition, selecting "SET AIR DOCTRINE" will change the current air doctrine setting for that Air HQ to match those in the currently selected air directive.

V1.01.01 – 30 September 2015

Changes made to the air game rules that are documented in the OnePageGuide 4b:

Added air phase toggle for air superiority and naval patrol ADs allowing ADs to be set to fly in either the friendly or enemy player air phase only, or in both.

Added night Air Superiority/Intruder missions.

Added code which enables "Wilde Sau" (Wild Boar) tactics for the German JG 300/JG 301/JG 302 groups starting from July 1943.

V1.01.31 – 9 April 2016

Rule Change - Air Superiority AD's now always execute before Naval Patrol flights.

5.3.II. NAVAL PATROL AIR DIRECTIVE MODE (F7)

The purpose of this mode is to plan air missions where aircraft attempt to establish or maintain control of ocean or sea water hexes to allow or deny naval transport of units and supplies (17.3.5). Many air group units are assigned to Coastal or Naval Air HQ units and set so that they may only perform naval patrol missions. Naval Patrols are automatically conducted by the computer and are not reflected in the automatic air directive creation summary screen. The player can manually assign specific Naval Patrol air directives to Air HQ units. Setting up a Naval Patrol directive aimed at a specific target area is similar to setting up a Ground Attack directive. The main difference is that the target area will be over water instead of over land.

Summary: Select Naval Patrol Air Directive Mode (F7). Select Air HQ to be issued naval patrol air directive. Go to map and left click on a hex to select desired target hex. If desired, manually select air group units (5.3.4) and/or change air doctrines (5.3.2). When Setup Air Directive and any desired changes to Advanced Options are complete, select CONFIRM to assign the completed air directive to that Air HQ.

Details:

1. For a new Naval Patrol Air Directive

Select Naval Patrol Air Directive Mode (F7).

Select Air HQ to be issued naval patrol air directive. A new "NAVAL PATROL" will be displayed and selected as annotated with "<<<<." A "Set up Air Directive" will be displayed in the lower left hand side listing TYPE <NAVAL PATROL> and TARGET <Select Target Hex>.

Go to map and left click on a hex to select desired target hex – this must be a sea or ocean water hex.

Set up Air Directive expands to include the following options:

TARGET:

Hex: Lists selected target hex "Hex(xxx,xxx)." Selecting that link reverts to previous display and allows player to change the target hex.

Flight Path: The map will display a green line showing the path to the target, and a purple line showing the return path. The green hexes indicate the part of the path protected by escorts, while the purple hexes show any part of the path without escort on the way to the target. The waypoints on the paths can be adjusted. Left click selects green path waypoint (or both if in the hex) and right click select purple path waypoint. Once a path is selected, left click in hex to move waypoint(s) to the selected hex.

S BASE: Staging base, which is an airbase above where all the air group units involved in a Naval Patrol mission will rendezvous before proceeding on to the target. The computer will select a staging base each time the player changes the target hex.

Selecting the S BASE link after the target hex has been set will allow the player to go to the map and select another staging base, which must be a hex with an airbase unit present.

AREA: The target hex specified is the center of a box area in which Naval Patrol missions will be flown. Set the radius of the box by selecting the number next to AREA. This can be set from 0 to 10 in the text box displayed, and indicates the amount added

and subtracted to the x and Y coordinates to form the area. The number in parentheses that appears next to the number set by the player indicates the number of hexes in total that make up the target area. Note that this number may display zero if no air group units have been assigned to the mission yet. Like the flight path above, the target area is color coded with green hexes the part of the area that escorts can reach and the purple hexes the part of the area that escorts are not available or cannot reach.

INTENSITY: Toggle the link to select low, medium or high intensity for the air directive. Initial settings are determined by current Naval Patrol air doctrines for that air HQ (5.3.2).

GROUPS: Default is AUTO selection of air group units. Select the link to manually assign air group units to the air directive and allow for the change of load outs for those same air group units (5.3.4).

WEATHER:

MIN FLY: Lists current ground attack air doctrine setting for that Air HQ, which is minimum air weather conditions that must be met in order for the mission to launch. If set to All, then will fly in all weather conditions, otherwise, the level set is the minimum weather it looks for in order to fly a mission

CURRENT: Lists current weather conditions.

Advanced Options can be displayed by selecting “^^^ ____ ^^^ and include:

SCHEDULE: The seven days of the turn are shown as D1 to D7, indicating days when a mission will attempt to fly. The player can toggle on (white) or off (gray) the days as desired. Initial settings are determined by current Naval Patrol air doctrines for that air HQ (5.3.2).

STRIKE NUM: Select the link to manually set the number of air strikes per mission per day that will be attempted. This can be set from 0 (AUTO) to 999 in the text box displayed. If set to AUTO, then number of air strikes will be determined by the current intensity setting.

ALTITUDE: Select (-) to decrease or (+) to increase mission altitude in increments of 1000 feet. Initial altitude setting is determined by current ground attack air doctrines for that air HQ (5.3.2).

PRIORITY: Select (-) to decrease or (+) to increase the priority of the air directive. The Priority ranges from Very Low to Very High. The higher priority air directives are resolved (flown) first each day.

MIN AC(ESC): Select link to set the minimum number of bombers/fighter bombers and the minimum number of escorts that must be available in order for a mission to be launched. A text box for each type of aircraft will be displayed sequentially. As long as the minimum is available, a mission will be flown.

REQ AC(ESC): Select link to set the requested number of bombers/fighter bombers and the requested number of escorts that the player would like to have fly the mission if available. A text box for each type of aircraft will be displayed sequentially. If no player input, then REQ AC(ESC) will match MIN AC(ESC). If MIN AC(ESC) is available, a mission will be flown.

FOLLOW PATH: Toggle Yes or No. When Follow Path is set to Yes, the missions will fly along the flight path until they reach the last waypoint, and then fly from that waypoint to the specific target hex for the mission. When set to No, the mission will fly directly from the staging base to the specific target hex for the mission.

PART ESC: Toggle link to yes or no partial escorts. If set to yes, than escorts that cannot fly all the way to the target are counted as escorts for meeting the minimum and requested number of escorts for the strike. If set to no, then only escorts that can fly to the target will count for these purposes.

When Setup Air Directive and any desired changes to Advanced Options are complete, select CONFIRM and then Yes to assign the completed air directive to that Air HQ.

2. To edit Current Naval Patrol Air Directive:

All of the above settings can be changed by selecting the confirmed NAVAL PATROL air directive and making changes as described previously. In addition, selecting “SET AIR DOCTRINE” will change the current air doctrine setting for that Air HQ to match those in the currently selected air directive.

V1.01.01 – 30 September 2015

Changes made to the air game rules that are documented in the OnePageGuide 4b:

Added air phase toggle for air superiority and naval patrol ADs allowing ADs to be set to fly in either the friendly or enemy player air phase only, or in both.

5.3.12. AIR TRANSFER MODE (F10)

The purpose of this mode is to conduct the transfer of air group units between friendly air base units within the air group unit's range. Note that air group units may transfer at any time during a player's turn, either in the air planning phase or the action (move) phase, to include during the manual creation or editing of a air directive (5.3.4.2).

Summary: Left click to select air base unit, left click in unit bar to select air group units to transfer, right click on in-range friendly air base unit to transfer selected air group units.

Details: Select air transfer mode (F10), which will display the number of friendly air group units at each air base unit on the map. To transfer air group units between friendly air base units while in air transfer mode (F10), the player first selects an air base unit, which will bring up the list of air group units attached to the air base unit in the unit bar (5.2.3). In addition, the air base unit hex selected will be shaded green, the Air HQ that controls the airbase unit will be listed in the top window, and any hex with an airbase

unit also controlled by that Air HQ will be shaded in blue. All other hexes with airbase units will be shaded in olive green.

Next select the air group units to be transferred by left clicking on the far left side of the rectangular unit box that contains the applicable air group unit's name. This will display a small unit icon from the air base unit the air group units are attached to as verification that the air group unit has been selected. The air group unit can be deselected by left clicking on the applicable air base unit icon in its rectangular unit box, which will also remove the air base unit icon. Finally, right click on the air base unit to transfer the selected air group units. The air group unit must have enough miles travelled remaining in order to be eligible to transfer. If a unit has not flown at all during the turn, then it may transfer to any friendly base regardless of distance. This may max out the air group's miles so it will be unable to do anything else during the current turn.

Air Transfer Air HQ Filter: Players can set Air HQ filters to assist in the process of transferring air group units between air base units. After selecting an air base unit in air transfer mode, a <SET AIR HQ FILTER> link will display in the lower right side of the unit bar. Select the link to display a list of available Air HQ units. The red number to the right of each Air HQ unit is the number of air group units assigned. The player can select an air HQ unit or select <BACK> to return to the list of air group units attached to the selected air base unit. If an air HQ is selected it will display only air group units at the selected air base unit that are attached to the selected air HQ unit. If the selected air base unit doesn't contain any air group units belonging to the selected air HQ unit, the computer will select and center the map on the first air base unit on the list (lowest id) which has at least one air group unit assigned to the selected air HQ unit. With the filter on, the map will only display air base units that have air group units assigned to the selected Air HQ unit and the number of air group units at those air base units will be in red font rather than the unfiltered yellow font. The player can cycle through the air base units by selecting the ">" link or clear the filter by left clicking on the air HQ unit name.

GAME INTERFACE TIP

Selecting air group units to be transferred can be a little tricky since you are dealing with a blank space. First, move the mouse into the left side of the unit box until the unit box illuminates (see screenshot below). Make sure you are far enough over to the left, but still in the box. If the air group unit name turns from white to yellow, you are too far to the right. Left click in the empty space to the left of the unit name and you should get the air base unit counter symbol that confirms you have properly selected that air group unit for transfer. De-selecting is much easier; just left click on the air base unit counter symbol.

V1.00.44 – 9 June 2015

Transferring an air group will send all damaged/reserve planes to the transit air pool. If the air base is isolated they will be destroyed.

Interface Adjustment - You can now always access the air base detail screen while in F10 mode by double clicking on an airbase.

V1.01.01 – 30 September 2015

Air Transfer (F10) – Changed/improved Air Transfer interface functionality. It is now called the Air Navigation Panel to reflect the increased functionality, although air transfers are still executed from this panel. See OnePageGuide4a for complete details.

V1.01.31 – 9 April 2016

Interface change - Lower level air HQs (ex. Fliegerkorps) will be listed after their parent air HQs (LF) in air transfer mode (F10).

Fixes and improvements for the air navigation panel. (Mouse clicking should be faster in F10 mode).

5.3.13. AI MOVE/MANAGE AIR UNITS/BASES

When this button is used, the computer will move air group units around the map to different airbases based on the situation. See 17.3.11 for details.

5.4. USING THE INTERFACE TO CONDUCT ACTIONS IN THE MOVEMENT

PHASE

The phasing player can conduct movement, combat, air transport and transfer missions and other administrative functions in any order desired during the action (move) phase. Assuming enough movement points were available, for example, a combat unit could use tactical movement to move adjacent to an enemy unit, attack, then use tactical movement to move to a rail hex, and then use strategic movement along the rail network and finally detrain. Many actions require the selection of a specific mode before they can be conducted. There are four ground unit movement modes and two air mission modes. Some air missions, such as, air superiority and ground support air directives, as well as the effects of interdiction caused by ground attack missions, will be conducted by the computer during ground unit movement and combat, but the phasing player will need to switch to an air mode to conduct air transport and transfer missions. Similarly, while in an air mission mode, no ground units can move and only air base units and ground units on air base units can be selected (for possible air transportation). Per 5.2.2.1, for stacks of units, left clicking on a hex will select the top unit, further left clicking will cycle through the stack and double left click or space bar will select all the units in a hex. The following lists the different modes and discusses how to conduct actions using the interface.

5.4.1. MOVE MODE (F1)

5.4.1.1. TACTICAL GROUND MOVEMENT

Summary: Left click as necessary to select, right click to move.

Details: First select a hex with units and then if necessary select the unit(s) that will be moving. Selecting a blank part of the unit box will toggle unit selection. The current movement allowance will always be displayed on the unit counter graphic in the unit bar. With 'show movement allowed' enabled (default) hexes the unit with the fewest movement points remaining cannot reach will be shaded grey. Impassable hexes, to include hexes blocked due to enemy units, will be shaded red. If 'show movement path' is enabled (default) then moving the mouse cursor over the hexes where movement is allowed will display a line of symbols, each with a number showing how many movement points the unit with the fewest remaining movement points would have left if it was moved to the hexes along that path. To move the selected units to an allowed location, right click in the desired hex. If the unit(s) that was just moved is eligible to undo the move, the 'undo move' button (hotkey 'u') will appear at the right end of the mode tool bar. See section 14.1 for detailed tactical movement rules.

5.4.1.2. HASTY ATTACK

Summary: From single hex only. Left click as necessary to select, right click to attack.

Details: First select a hex with at least one combat unit that is adjacent to an enemy unit and use the unit bar to select the units that will participate in the attack. Move the mouse cursor over the hex with enemy units that will be the target of the attack. The hasty attack symbol will appear if the selected units are eligible to attack. Right click on the target hex to initiate a battle. See section 15.2.1 for hasty attack rules.

5.4.1.3. DELIBERATE ATTACK

Summary: Multiple hexes allowed. Shift-left click and Shift-left mouse cursor over to select, shift-right click to attack.

Details: Hold the shift button down and left click on a hex with friendly combat units that will be participating in the deliberate attack. To add additional combat units from other hexes to the deliberate attack, to include on-map artillery combat units firing from two hexes away, move the mouse cursor (with Shift still down) over the applicable hexes, which will result in the selection of all additional units in those hexes. The unit bar will then change to a list of all units currently selected, with a unit counter graphic followed by the unit name. Units that do not have sufficient movement points to attack will be automatically deselected. Any units in the hexes that the player does not wish to attack can be deselected by left clicking the counter graphic in the unit bar. De-selection will be confirmed by the counter graphic being removed and units can be re-selected by left clicking again. Only combat units will be selected during this process, but combat units not eligible to participate (usually non-artillery combat units two hexes away) in the deliberate attack will need to be manually deselected in order for the attack to be conducted by the computer. Once the phasing player has selected all the combat units that will be participating in the attack, move the mouse cursor (with Shift still down) over the hex with the enemy units that will be the target of the attack. The deliberate attack symbol will appear if the selected units are all eligible to attack. Right click on the target hex to initiate a battle. See section 15.2.2 for deliberate attack rules.

GAMEPLAY NOTE

The phasing player does not initially need to have the shift key down in order to select the initial hex, but adding additional units in other hexes, selecting a target for the deliberate attack and conducting the deliberate attack will require the use of the shift key.

5.4.1.4. RAIL REPAIR HQ UNIT RAIL REPAIR

Move the Rail Repair HQ unit into a hex that is suitable for rail repair using tactical movement. Select the RRC (Rail Repair Cost) text that will appear on the Rail Repair HQ unit in the unit bar if the unit has enough MPs to perform the repair. Selecting the RRC

will set the damage of the hex to one percent, and this last point of damage will automatically be repaired during the Rail Repair segment of the player's next logistics phase. Designating a hex to be repaired expends movement points. The number next to the RRC indicates the MP cost to the rail repair unit to repair the current hex. If the Rail Repair HQ unit is not in a location that it can conduct a rail repair operation, the RRC number will display a '-' instead (14.2.2).

5.4.2. RAIL MODE (F2)

5.4.2.1 GROUND UNIT STRATEGIC RAIL MOVEMENT

Summary: Left click as necessary to select, right click to entrain and move, left click in unit bar or select movement mode (F1) to detrain.

Details: Units must start on or be moved by other movement to a hex with a friendly undamaged rail line not adjacent to enemy units in order to conduct rail strategic movement. First select a hex with units and then if necessary select the unit(s) that will be moving. The current strategic movement point (SMP) allowance will always be displayed next to the SMP symbol just below the unit counter graphic in the unit bar. With 'show movement allowed' enabled (default) hexes the unit with the fewest movement points remaining cannot reach will be shaded grey. Impassable hexes, to include hexes blocked due to enemy units, will be shaded red. If 'show movement path' is enabled (default) then moving the mouse cursor over the hexes where movement is allowed will display a line of symbols, each with a number showing how many movement points the unit with the fewest remaining movement points would have left if it was moved to the hexes along that path. To move the selected units to an allowed location, right click in the desired hex. The on-map counter unit will display the entrained symbol and the 'on train' button will appear in the unit bar. The unit will remain entrained until either the 'on train' button is selected or movement mode (F1) is selected, returning the unit to its previous status. Units without sufficient SMP available will be unable to detrain. Remaining Railyard Capacity will be displayed for each railyard when in rail move mode with the number in the rail circles on the map equal to 1000 tons of remaining load/unload capacity. If the unit(s) that was just moved is eligible to undo the move, the 'undo move' button (hotkey 'u') will appear at the right end of the mode tool bar. See section 14.2 for strategic rail movement rules, to include railyard capacity and movement penalties for rail line usage.

5.4.3. NAVAL TRANSPORT MODE (F3)

The purpose of this mode is to conduct naval movement of ground units from a friendly port to another friendly port or a sea or ocean water hex. See section 16.3 for details on naval transport rules.

Summary: Left click as necessary to select, right click to load on ship and move, left click in unit bar or select movement mode (F1) to off load from ship.

Details: Units must start on or be moved by other movement to a hex with a friendly port in order to conduct naval transport strategic movement. First select a hex with units and then if necessary select the unit(s) that will be moving.. The current strategic movement point (SMP) allowance will always be displayed next to the SMP symbol just below the unit counter graphic in the unit bar. With 'show movement allowed' enabled (default) hexes the unit with the fewest movement points remaining cannot reach will be shaded grey. Impassable hexes will be shaded red. If 'show movement path' is enabled (default) then moving the mouse cursor over the hexes where movement is allowed will display a line of symbols, each with a number showing how many movement points the unit with the fewest remaining movement points would have left if it was moved to the hexes along that path. Units cannot load/unload to/from ships at permanent ports unless sufficient port capacity is available. The remaining Port Capacity for friendly ports will be displayed on the map for each port with the number in the port circles on the map equal to 1000 tons of remaining load/unload capacity. To move the selected units to an allowed location, right click in the desired hex. The destination hex can be at sea or at a friendly port. The on-map counter unit will display the on ship symbol and the 'on ship' button will appear in the unit bar. The unit will remain on the ship until either the 'on ship' button is selected or movement mode (F1) is selected, returning the unit to its previous status. Units on ships are automatically put into ready mode and cannot be put into reserve or refit as long as they are on ships. If the unit(s) that was just moved is eligible to undo the move, the 'undo move' button (hotkey 'u') will appear at the right end of the mode tool bar. See section 16.3 for naval transport rules.

5.4.3.1 INTER-THEATRE NAVAL TRANSPORT

Western Allied ground units, to include Amphibious HQ units, can use naval transport mode to move between the United Kingdom and the Mediterranean. First place the unit(s) in naval transport mode (F3), and then move them to a water hex on the west edge of the map area. At the start of the next Western Allied player turn, the unit(s) will be placed in or adjacent to the applicable arrival port. This is Liverpool for transits from the Mediterranean to the UK and Oran for transits from the UK to the Mediterranean. Amphibious HQ units will arrive a few hexes offshore from the applicable arrival port.

5.4.3.2 NAVAL TRANSPORT INTERACTION WITH ENEMY UNITS

Units cannot move through or adjacent to an enemy amphibious HQ unit while in naval transport mode. Enemy units that remain in a water hex 'in ships' at the end of their turn block the naval transport of friendly units through that hex. Units on ships in water hexes and the transports on which they are embarked will be destroyed if an enemy amphibious HQ unit utilizing amphibious transport moves adjacent to them (16.6.2).

Units on ships that are on a land hex (were on a temp port and didn't unload from the ships) can always move out to sea even if the temp port subsequently is removed from play. If a unit on ships is in a port hex with no friendly combat unit stacked with it, it will make an offset move out to an adjacent water hex (with no losses) if an enemy unit moves next to it. It will also make an

offset move to an adjacent water hex if other friendly units lose a battle in the same hex and are forced to retreat. In addition, it will make an offset move to an adjacent water hex if it tries to move into a port next to an enemy unit without a combat unit.

When in naval transport mode and a unit is selected for movement, the naval contested hexes will be slightly darkened and enemy controlled hexes will be dark. Movement through these hexes is allowed, but at greater attrition levels (16.5.2).

5.4.4. AMPHIBIOUS TRANSPORT MODE (F4)

The purpose of this mode is to use amphibious transport between a friendly port and a coastal hex to conduct an amphibious landing. See section 16.6 for details on amphibious operations.

Summary: When in any movement mode (F1-F4), select up to two other units in a permanent port stacked with an amphibious HQ unit. Left click the amphibious HQ unit target button, and then right click on a clear, woods, bocage or city terrain hex to select it as a target hex. Right click on the target hex of the invasion. When setting targets, eligible friendly hexes are shaded green and enemy hexes eligible for invasion are shaded yellow. In a later turn after sufficient preparation points have accumulated, select the amphibious headquarters unit, then select the invade button on the amphibious HQ unit bar. When the invade button is selected, the eligible units in the hex use amphibious transport movement to a sea hex adjacent to the target hex, and the invasion will take place after the end of the turn in the amphibious phase after the next Axis logistics phase.

Details:

Use the following procedure to target a hex for an amphibious invasion:

Place an amphibious HQ and one or two eligible ground units in a permanent port hex only; invasions cannot be prepared or launched from a temporary port hex. Note that the player can target an invasion hex with just an amphibious HQ unit in the port hex; however, no preparation for the invasion will take place until an eligible combat unit is stacked with the amphibious HQ unit.

Select the amphibious HQ unit and the units in the same hex that are desired to prepare for the invasion. Armored divisions and HQ units other than amphibious HQ units cannot participate in amphibious invasions and will never gain preparation points, even if stacked in the same hex as an amphibious HQ unit. Note that there is no restriction on these types of units utilizing regular naval transport to move to ports opened by an amphibious invasion in the enemy players turn.

Select the 'Target' button in the unit tool bar.

Select yes to confirm setting of a new amphibious invasion target.

Right click on the desired target hex for the amphibious invasion. Left click the amphibious HQ target button, then right click on a clear, woods, bocage or city terrain hex to select it as a target hex. When setting targets, eligible friendly hexes are shaded green and enemy hexes eligible for invasion are shaded yellow. There may be cases where an ineligible hex is shaded yellow (impassable hexes or requiring movement through ferry hexes), but the computer will not allow an ineligible hex to be targeted. Note that a line will appear from the amphibious HQ to the sea hex it will invade from (blue highlight), and then from this hex to the target hex (orange highlight). Make sure that no two invasion stacks share the same target water or land hex as this would prevent one of the invasions from occurring. When setting an amphibious target hex, if no valid target is chosen, no prep points are deducted from the units that tried to set the invalid target.

After right clicking the target hex, two new buttons appear on the amphibious HQ unit. The one on the left is the coordinates of the target hex, which can be used to change the target hex of the invasion. The button on the right will display INVADE once the Amphib HQ unit has at least 50 prep points. In addition, on map combat units must have at least 30 prep points to be able to participate in an amphibious invasion. Additional eligible combat units can be added to the stack with the amphibious HQ on a later turn, but they will start with zero prep points.

To conduct the amphibious invasion, select the INVADE button and then select yes on the confirmation text box.

The amphibious HQ unit and accompanying eligible ground units will be moved using amphibious transport to a water hex adjacent to the land hex to be invaded. Once the turn is ended, and after the enemy logistics phase, the invasion forces will launch and amphibious assault on the target land hex during the amphibious phase (4.1).

If the amphibious assault is successful, the ground units will advance into the target hex. A temporary port will be created that will exist as long as an amphibious HQ unit is in an adjacent sea or ocean water hex. In addition, a size two airbase unit with 50 percent damage will be created in the hex if it is clear or bocage terrain.

5.4.4.1. AMPHIBIOUS TRANSPORT MAP AREA GRAPHICAL DISPLAYS

When in naval amphibious mode (F4) and a unit is selected, the naval contested hexes will be slightly darkened and enemy controlled hexes will be dark. Players can target hexes for amphibious transport movement no matter what the sea control status, i.e. even if the path goes through enemy controlled water hexes. Amphibious HQ units will be able to select Invade if the path would still go through enemy controlled water hexes, however, assigned troop and cargo ships can expect to suffer significant attrition (9.5.3). A warning text box will display after the standard Amphibious invasion Y/N confirm message when the path is going through enemy controlled sea hexes: Amphibious path contains x enemy hexes – continue? Y/N.

Also when in Amphibious Transport mode (F4), assigned (pending) amphibious invasion and associated airborne landing hexes will be displayed on the map. Amphibious landing ground hexes will be shaded red, the water hexes Amphibious HQ units will move to will be shaded blue and airborne landing hexes will be shaded light blue.

5.4.5. AIR TRANSPORT MODE (F9)

Air Transport mode can be used to conduct three types of air transport missions; airdrop of freight (supply) (17.3.7), air transport

of non-motorized combat units to or adjacent to friendly air base units (17.3.8), and airdrop of airborne combat units (17.3.9). The air transport mode button and F9 hotkey has a toggle mode between Air Transport – Units and Air Transport – Freight. When F9 is first selected, the unit mode will be enabled; and when selected again the freight mode will be enabled, then back to unit mode, etc. Each time F9 mode is selected from another mode (F1, F3, etc.) it will start in unit mode. The current air transport mode is listed in the top toolbar. Players are cautioned to make sure they are in the desired air transport mode prior to attempting to conduct a mission.

Air group units must have zero miles flown (17.1.1) and not already be assigned to drop an airborne unit in the amphibious phase in order to air transport or airdrop a unit. Air group units can fly air transport freight missions even if they have flown already in the turn.

For air transport and air drop of non-motorized units, while in air transport mode unit (F9), the player can select units on an airbase by left clicking on an airbase hex to bring them up in the right hand unit bar, but non-eligible units will deselect automatically and cannot be selected. Only non-motorized units, without attached motorized support units, that are on an airbase unit may be selected when in F9 mode. Left-clicking on a non-airbase hex will have no effect when in air transport (F9) mode.

When in Air Transport mode (F9), assigned (pending) amphibious invasion and associated airborne landing hexes will be displayed on the map. Amphibious landing ground hexes will be shaded red, the water hexes Amphibious HQ units will move to will be shaded blue and airborne landing hexes will be shaded light blue.

The airborne planning screen (hotkey Ctrl-a) displays the status of all airborne units (26.3.37).

5.4.5.1 AIR TRANSPORT FREIGHT TO FRIENDLY UNITS

Summary: When in Air Transport Freight mode, select a hex with an air base unit to use as the stage base, which will highlight the hex. Then, to conduct an air transport of freight mission (17.3.7), either right click to select a hex containing a friendly unit or Shift-right click on the hex with friendly units to manually select air group units to conduct the air transport freight mission. If utilizing the latter method, the player can select between single mission and multiple missions.

Details: There are two methods for the player to conduct air transport freight missions. In either case, the player first has the option of selecting a specific staging base for the mission by selecting a hex with an air base unit. If the player does not select a staging base, the computer will automatically assign one for the mission. For semi-automatic missions, right click on the desired target hex containing the friendly unit to be resupplied. The computer will automatically select air group units and conduct the air transport freight mission, but only if transport aircraft are available. For manual missions, Shift-right click on the the desired target hex containing the friendly unit to be resupplied. The 'Pick Air Units for Mission' window will display (26.3.29). Select or deselect air group units as desired and select the 'Launch' button to conduct the air transport supply mission. For manual missions, Level bombers can be assigned to an air transport mission at the cost of one administration point per air group unit (12.1). The player can also select either single mission or multiple missions. If the Multiple Missions setting is selected, then the assigned air groups will fly repeated missions until they are have exhausted their miles flown allowance or fallen below the percent required to fly.

5.4.5.2 AIR TRANSPORT NON-MOTORIZED UNITS

Conduct an air transport mission to transport a non-motorized combat unit from a friendly air base unit to a hex with or adjacent to a friendly air base unit (17.3.8) as follows:

Summary: While in air transport unit mode (F9), left click to select non-motorized unit on air base unit, Shift-right click on target friendly air base unit to manually select air group units to conduct air transport of non-motorized unit.

Details: There is only one method to conduct the air transport of a non-motorized combat unit. The combat unit must begin the process in a hex stacked with a friendly air base unit. A unit must have at least 1 MP remaining in order to be air transported. While in air transport unit mode (F9), select the combat unit to be transported. Next Shift-right click on the target hex, which must be a hex with a friendly air base unit or a town, city or urban hex adjacent to a friendly air base unit. The 'Pick Air Units for Mission' window will display (26.3.29). Select or deselect air group units as desired and select the 'Launch' button to conduct the air transport combat unit mission. Note that the number of 'Max Sorties' must at least equal the number of 'Required Sorties' for the air group units selected to conduct the mission as displayed in the 'Pick Air Units for Mission' window. Air transport of non-motorized units can be conducted with up to 2 sorties (max sorties of 2). The computer does not account for possible combat and operational losses when figuring the number of sorties required.

5.4.5.3 AIR DROP AIRBORNE COMBAT UNITS

Conduct an air transport mission to airdrop an airborne combat unit from an air base unit to a target hex (17.3.9) as follows:

Summary: Left click to select airborne unit on air base unit while in any mode but air transfer, select target button in unit bar, right click on desired target hex. In a later turn once sufficient preparatory points have accumulated, select the unit and then select air transport unit mode (F9), select drop button in unit bar to manually select air group units to conduct airdrop of airborne combat unit. Airborne target hexes can only be set in the movement phase, not the air planning phase.

Details: Airdrops are a special type of air transport that requires several turns of preparatory time before they can be conducted. Normal airborne drops are executed during the player's movement phase. Airborne drops in support of an amphibious invasion are executed after the enemy player's logistic phase just prior to the execution of the amphibious invasion in the amphibious phase. The combat unit must begin the process in a hex stacked with a friendly air base unit. Airborne Divisions can be dropped as one unit or broken down into regiments/brigades. While in any mode but air transfer, select the combat unit to

be transported for airdrop. – In order to drop an airborne unit, it must first plot a target hex for a potential airborne drop. Every airborne unit has a Target button on its right unit bar info. Select the button and confirm wanting to set a target hex. Select yes and then right click on the desired target hex. Air drops are not allowed in mountain and impassable hexes. They are allowed in all other terrain; although air dropped units will take more losses during a drop into more congested terrain. Airborne units can drop on a hex containing friendly units as long as they do not exceed stacking limits, in which case they will scatter to an adjacent hex.

The button will then display the target hex and the number of preparation points accumulated for dropping in that hex. To change the target, click on the button showing the target hex. If the target is changed, then one half of the prep points are lost. When amphib prep at the start of a scenario is set to a non-zero value, then the airborne unit will get that number of airborne prep when it retargets. The on-screen text info about a scenario will list if the scenario has a non-zero amphib prep value. When setting an airborne target hex, if no valid target is chosen, no prep points are deducted from the units that tried to set the invalid target. Prep Points accrue in each friendly logistics phase equal to $(100 - \text{current prep points})/2$, with a minimum per turn gain of 20, and a max prep point value of 95. Airborne units must be on an airbase to set a target, and if in a logistics phase the unit is not in an airbase hex it will lose its target and all its prep points.

Airborne units may not order an airdrop unless they have at least 50 prep points (no Drop button will be visible on the unit). Once sufficient prep points have been accumulated, when in the air transport unit mode a Drop button will appear on the right unit bar for the airborne unit. To drop the unit, left click on the button and then assign air group units to transport and escort the airborne combat unit to the target hex.

The 'Pick Air Units for Mission' window will display (26.3.29). Select or deselect air group units as desired and select the 'Launch' button to conduct the airdrop airborne combat unit mission. Note that the number of 'Max Sorties' must at least equal the number of 'Required Sorties' for the air group units selected to conduct the mission as displayed in the 'Pick Air Units for Mission' window. Airborne drops require a max of 1 sortie. The computer does not account for possible combat and operational losses when figuring the number of sorties required.

The airdrop of airborne combat units has to be the first and only mission conducted by a transport air group unit in a turn. Once a transport air group unit has used miles for any other purpose, it will be unavailable for airdrop of airborne combat unit missions.

Airborne landings that are within 8 hexes of a supplied friendly unit (traced over land hexes) take place immediately upon selecting the Drop button. Airborne landings that are supporting an amphibious landing (i.e. don't qualify as being within 8 hexes of a supplied friendly unit but are within 1 hex of a hex that has an ordered amphibious invasion) are executed after the enemy player's logistic phase just prior to the execution of the amphibious invasion in the amphibious phase and will automatically be a night drop.

5.4.6. AIR TRANSFER MODE (F10)

Conduct the transfer of air group units between friendly air base units within the air group unit's range. Note that Air group units may transfer at any time during a player's turn, either in the air planning phase or the Action (Move) phase). See 5.3.12 for details.

5.4.7. AI MOVE/MANAGE AIR UNITS/BASES (SHIFT A)

When this button is used, the computer will move air group units around the map to different airbases based on the situation. See 17.3.11 for details.

6. MAP AND TERRAIN

The map displays the physical and political features of the area where the War in the West primarily took place, to include the major rail networks. A hex grid has been superimposed to regulate movement, combat and supply. The hex grid can be toggled on/off with hotkey Ctrl-g. Weather effects (22) have also been integrated into the map and terrain.

6.1. MAP AREA

Each hex on the map represents an area of 10 miles and is classified as one specific type of terrain, though there may be additional features present in the hex or hex sides. Hexes may contain towns, which can have factories, but do not normally have any terrain effect. Rivers and less than full hex lakes follow hex sides and can increase or block movement across applicable hex sides. Hexes may also be defined as coastal, allowing for the presence of ports in towns, city and urban hexes as well as naval movement. Rail networks are represented by rail lines in hexes, which are used for strategic movement and supply as well as to delineate mountain passes.

6.1.1. MAP BOUNDARY AREAS

The map is marked by various dashed and dotted lines that delineate different boundary areas per the captioned screenshots above.

6.2. TERRAIN

The below terrain types and features are represented on the map area and can affect movement, combat and supply. See section 14 for impact on tactical and strategic movement and 15.3.1 for impact on combat.

6.2.1. TYPES OF TERRAIN HEXES

Each hex on the map is classified as one of the below terrain types. All terrain except clear is considered covered terrain for air reconnaissance purposes (13.1).

	Clear
	City
	Light Urban
	Heavy Urban
	Light Woods
	Heavy Woods
	Rough
	Mountain
	Swamp
	Sand
	Desert
	Bocage
	Tundra
	Ferry hex
	Water hexes: Ocean/Sea/Lake (No tactical movement, but strategic naval/amphibious movement and supply trace possible)
	Impassable River (Can become passable if frozen)

	Impassable Beach
	Impassable Escarpment

6.2.2. TERRAIN FEATURES

The following terrain features can be in addition to the terrain type in a hex. Some are purely political features, but others can impact movement, combat and supply.

Coast: feature of any type of terrain bordering ocean and sea water hexes. Coastal hexes can be used for naval transport if a friendly port is located in the hex and may be the target of an amphibious landing (16).

Port: Feature and and special factory that may be located in town, city or urban hexes in coastal hexes. Ports generate naval and amphibious transportation tonnage capacity as well as naval interdiction points.

Ferry: A special type of sea water hex that allows movement between two friendly land hexes separated by the ferry hex (14.1.6). The presence of an amphibious HQ unit in a ferry hex allows ground units to attack from a ferry hex.

Railroad: Rail lines run through hexes, with undamaged and linked rail lines forming a rail network that serves to link each sides supply grid. Note that rail hexes that are adjacent to enemy units are considered not connected to the rail network. These hexes may not be used for strategic rail movement and are not considered rail lines for supply purposes (20.1).

Mountain Pass: Mountain hexes with rail lines passing through them. If a unit enters a mountain pass through a hex side with a rail line in that hex, the cost to enter the hex is substantially reduced.

Town: Terrain feature that can contain factories. Towns have a population of from 0 to 4. Towns with a population of 0 represent areas that have a size smaller than the 50,000 people represented by one population point.

City: Terrain feature that normally indicates a city terrain hex with population between 5 and 24.

Major City: Terrain feature that indicates an urban hex with a population greater than 25.

National Capital: Terrain feature that indicates the capital city of most nations on the map area.

Minor River hexside: Affects movement point costs and combat.

Major River hexside: Affects movement point costs and combat.

Impassable Lake or River: Blocks movement, combat and supply trace.

Air Base Unit (Airfield): Displays presence of an air base unit in the hex. Symbols for Air Base units on the map reflect the size of the air base unit (1, 2 or 3). The larger the number, the bigger the air base unit.

Ground Unit Exclusion Zone: Some areas are normally off limits to ground units other than air HQ units. Air Base units and air group units are allowed in these areas, as are air HQ units and antiaircraft support units attached to locations. Ground units other than Air HQ units are not allowed in these areas. The areas off limits are Hungary, Rumania, Slovakia, Yugoslavia, Greece, Bulgaria, Albania and Axis controlled parts of the Soviet Union. Units cannot rout into ground unit exclusion zones. Units can be retreated one hex into an exclusion zone. Once there, they will automatically be displaced during their logistics phase to a nearby friendly town, city or urban hex.

Neutral (Impassable) Terrain: No air, ground or naval units may move, rout, or retreat into Spain, Andorra, Switzerland, Sweden, Ireland, Norway or the parts of the Soviet Union that have been captured by the Soviet advance. These areas are shown as neutral in the hex pop-up text and when using the 'e' hotkey (Norway and the Soviet Union were not neutral, this is just the method we have of making these areas out of play).

Impassable river hexsides can be crossed if both sides are friendly controlled, paying the same cost as if crossing a major river hexside.

6.2.3. TOWN, CITY AND URBAN HEXES

Town, city and urban hexes are terrain features or types that are population centres as well as locations for factories, to include ports and railyards. Generically referred to as city or cities, city and urban hexes as well as hexes with towns have a permanent population represented by points where one point is equivalent to 50,000 people. Population is used to determine the density of the built up area in the hex, represented by the designations of Heavy Urban, Light Urban, City or Town. The Manpower in a hex is distinct from population, though equal to it as of the scenario start, and is represented by manpower factory points that can change due to combat, starvation and migration. Manpower thus represents the current recruiting potential of a town, city or urban hex and its surroundings, and is what generates replacement soldiers during the game. City and urban hexes are further sub-divided by population as cities or major cities and national capitals are also marked as appropriate.

6.3. CONTROL OF HEXES AND ZONES OF CONTROL

6.3.1. CONTROL OF GROUND HEXES

Hexes are either friendly (controlled by the phasing player), enemy (controlled by the non-phasing player), or pending friendly, which are hexes that have been taken during the current turn and will switch ownership at the end of the phasing players turn. Headquarters units are not allowed to move into enemy hexes, but may move into pending friendly hexes, representing the inability of headquarter units to move through areas that have not been cleared by combat units during the current turn. There are additional costs for all units moving into enemy and pending friendly hexes to account for both timing issues and the inherent difficulty involved in movement through recently cleared areas (14.1.4). Enemy controlled hexes block tracing of supply, commitment of support units from headquarters during combat, and provision of support squad ground elements to units from headquarters units during the logistics phase.

6.3.2. GROUND ZONES OF CONTROL

Zones of Control (ZOC) represent the ability of ground combat units to exert control over the land map area in their vicinity and the area that they move through. In Gary Grigsby's War in the West, ZOC's are used to change enemy hexes into pending friendly hexes as well as to increase the cost of moving or tracing supply out of or between enemy units with ZOC's. All combat units have a ZOC that extends into the six adjacent hexes surrounding each unit for purposes of increasing the cost of enemy units moving out of a ZOC as well as from ZOC to ZOC. Routed or depleted combat units, headquarters units, rail repair units and air base units do not have a ZOC.

6.3.3. CONVERSION OF ENEMY GROUND HEXES

For purposes of converting enemy hexes into pending friendly hexes, ZOCs are only effective for larger combat units. All combat units convert the hex they enter as they move into a pending friendly hex. Division and Corps sized combat units convert the hex they enter as well as any unoccupied adjacent hexes in their ZOC unless the unoccupied hex is also in the ZOC of an enemy combat unit. Brigade and regimental size combat unit ZOC will not convert adjacent enemy hexes into pending friendly hexes. Supply can be traced through an enemy ZOC as long as the hex is friendly controlled or pending friendly, albeit at an increased distance due to additional movement point costs (20.4.1). The trace and range that headquarter units can provide support squad ground elements to other units are calculated in the same manner (7.7.4).

NOTE

HQ units must be able to trace a path of no more than five hexes through friendly or pending friendly hexes to combat units in order to provide support units during combat (15.4).

6.3.4. CONVERSION OF ISOLATED GROUND HEXES

Isolated hexes (20.2.1) that are not occupied by a friendly unit, or adjacent to a friendly combat unit will switch control to the other side automatically during friendly logistics phases. In addition, friendly hexes that are not adjacent to a friendly combat unit that can only trace a path of friendly hexes to isolated friendly units will also become enemy hexes. These cases represent the conversion of an empty isolated enemy pocket and the contraction of an existing pocket containing isolated enemy units respectively. HQ units in these hexes will displace, and air base units in these hexes will be captured and become enemy controlled (6.3.5).

6.3.5. AIR BASE UNIT CAPTURE

Enemy Air Base units in hexes that become pending friendly or were isolated and convert to friendly control are captured and become empty (no support units) air base units for the capturing side. When airbases are captured ready planes with enough pilots will be evacuated if sufficient amount of fuel is in the base. In case of low fuel the number of aircraft evacuated will be reduced. Evacuating aircraft will initially try to fly to the nearest air base that is more than 5 hexes from supplied enemy units and is attached to the same air HQ unit. If they cannot meet those criteria, they will fly to a friendly air base unit.

When an air base unit is captured, the new friendly air base unit will choose its HQ attachment based on the following priority order 1) if captured due to combat, the Air Command providing ground support to the HQ in charge of the ground combat 2) The Air Command in charge of the closest air base unit with the same nationality 3) The closest Air Command HQ unit. Captured air base units are automatically reset to supply priority 3 (20.4.2).

V1.00.00 – 21 November 2014

Airbases that are captured will lose some men in the airbase unit due to retreat attrition and the rest will return to the manpower pool.

V1.01.01 – 30 September 2015

Air groups which fail to fly out from captured base will show up immediately in the NR with zero planes and pilots.

6.3.6. CONTROL OF FERRY HEXES

Players may only move and trace supply paths over ferry hexes that they control, to include the naval movement of amphibious HQ units. Control of a Ferry hex is determined by the player with control of the greatest number of land hexes adjacent to the ferry. For this purpose each adjacent port that has a net level (1) of at least 1 counts as an extra hex controlled. If there is a tie, the tiebreakers in order are:

Side with greatest interdiction value in the hex.

Side with most number of Combat Value (CV) points adjacent to the hex.

If still tied, then the phasing player has control.

Note

(1) Port net level is equal to $(\text{Port Level} \times ((100 - \text{damage}) \times 0.01))$ where the level is the number of port factories in the hex.

6.3.7. CONTROL OF OCEAN AND SEA WATER HEXES

Control of ocean and sea water hexes is determined by the amount of naval interdiction projected by each side in the hex. Naval Interdiction values printed in sea hexes are displayed in green for Allied and grey for Axis. In addition, amphibious HQ units project something similar to a zone of control into adjacent water hexes and a type of naval air patrol within 2 hexes of their location that can cause enemy aircraft losses and a reduction in enemy naval interdiction values (16.6.2).

Control of an ocean or sea water hex is defined as having a map display adjusted interdiction level that is 2 greater than the enemy level. The map displayed values are the true value that is a number from 0-99, divided by 10 and then truncated. The true values are displayed in the hex pop-up, but the values shown on the map are the truncated /10 values, and it is these that are used for determining naval control of a hex. Example: Allied has a real value of 32 (map value of 3) and the Axis player has a real value of 16 (map value of 1). Since the Map value of the Allies is 2 or more than the map value of the Axis, the Allies have control of the hex. When interdiction is displayed (5.1.2.1), enemy controlled sea hexes are shown in red, neutral are shown darkened, and friendly control is shown normally. The hex pop up will display current control with hex control indicated by the text Axis, WA (Western Allies), or Neutral, which indicates contested water hexes. In the Action (Move) phase, if naval transport (F3) or amphibious transport (F4) mode is selected, then the impact of control of sea hexes on those modes of travel will be indicated as follows:

Friendly controlled – nothing displayed

Neutral – SHIPPING CONTESTED

Enemy controlled – SHIPPING HEAVILY CONTESTED

Enemy amphibious HQ unit and adjacent hexes – SHIPPING PROHIBITED

6.4. STACKING

A maximum of three on-map units, no matter what the type, size or status, may be in a hex at one time. Units can move through a hex with three units already present, but will be unable to stop in that hex. Combat unit breakdown can only take place if the broken down units will not exceed stacking limits (7.5.3). Left clicking on a hex with a stack of units will result in the top unit in the hex being selected. Further left clicking will cycle through selecting the units in the hex individually. Double left clicking or using the space bar will select all of the units stacked in a hex (5.2.2.1).

7. GROUND UNITS

Ground units consist of combat, headquarters, support, and multi-role units. Air base and rail repair units are unique types of headquarter units. Combat and headquarters units are on-map units. Support units are attached to headquarter and eligible combat units and are normally off-map. The exceptions are some labor and construction battalions that are automatically detached and appear on-map while conducting rail repair and multi-role units that can either be on-map combat units or attached support units. Ground units are either motorized or non-motorized, with four types of non-motorized units (7.9). All

ground units consist of a certain type and number of ground elements and have a Table of Equipment (TOE) that determines the number and type of those ground elements that are required for the unit to be fully manned and equipped. All ground units have a combat value (CV), which may be zero.

7.1. COMBAT VALUE (CV)

All ground units have a combat value (CV) that is used to determine the results of a battle. The unit CV is equal to the sum of the individual CV's for each ground element in the combat or support unit. The CV is representative of the ability to take or hold territory, often referred to as "boots on the ground." Thus the CV ratings of ground elements are weighted toward infantry and AFV ground elements, while artillery and other guns, though they have good firepower, tend to have low CV's (26.1.4). Unlike fixed combat factors that are found in other games, the CV in Gary Grigsby's War in the West is a calculated value that can only provide players an idea of the combat ability of the unit. Displayed Unit CV's are determined by a complex formula that takes into account the different ground elements making up the unit as well as unit morale, experience, fatigue, leadership and supply. CV values displayed for units are non-random approximations of what in combat is a series of die rolls and thus somewhat random values, so no single CV can be more than a guide to how the unit will perform in any particular combat. When Fog of War (FOW) is enabled the accuracy of the CV will be further degraded as the detection level (DL) decreases (13).

7.1.1. INITIAL AND MODIFIED COMBAT VALUE IN BATTLES

At the beginning of combat the initial CV is displayed on the combat resolution report and then, after combat is finished, the resulting modified CV is displayed as well. The resulting ratio between attacker and defender modified combat values is used to determine whether the defenders held their position or will be forced to retreat, rout or shatter (15.9). The combat value displayed on the counters and as the initial CV in the combat resolution window can be radically different from the modified CV shown at the end of the battle, not only due to combat losses, but due to the many random factors and leader rating checks that occur to determine the modified combat value. In addition, note that calculated CV's are fairly large numbers, so for ease of visualization the CV displayed on the unit counter on the map and in the unit bar are divided by 100 and rounded down, while the unit CV's displayed in the combat resolution display have been reduced by a factor of 10 and rounded down. The CV displayed on a unit counter will not be less than one unless it is a HQ, depleted or routed unit (7.1.3), but realize that due to rounding, on-map units with a CV of one could have an actual CV that ranges between 1000 and 1999, a substantial spread (15.9).

7.1.2. VEHICLE SHORTAGE CV MODIFIER

The CV modifier for units with a shortage of vehicles (15.6.2) is reflected in the CV values shown on the unit counters. However, since it does not impact defending units unless committing from reserve and since static units cannot attack, this modifier will not impact the CV values on the counters for static units, and will not impact the defense CV value shown for all units (the value shown after the equal sign). It continues to be reflected in the normal CV value of non-static units.

7.1.3. ZERO CV UNITS

To reflect their inability to participate in ground combat, some ground units will have a combat value (CV) of zero and will perform an automatic displacement move (15.11) if an enemy combat unit moves adjacent unless they are stacked with a friendly combat unit with a CV of at least one. A unit with a CV of zero will not participate in combat, but may take losses due to being forced to retreat or displace. Headquarter units will always have a combat value (CV) of zero. Units in a routed or depleted (Actual TOE of ten percent or less) state will also have a CV of zero. Note that there are instances, such as if a unit becomes depleted during the air execution phase, where a zero CV unit can end up next to an enemy unit and not automatically displace. Displacement will then occur when an enemy unit moves next to such a zero CV unit, to include HQ units, Units embarked on ships moving by sea transport in water hexes can move adjacent to enemy ground units (5.4.3).

7.2. GROUND ELEMENTS AND TABLES OF EQUIPMENT (TOE)

7.2.1. GROUND ELEMENTS

All ground units are composed of multiple types and numbers of ground elements, which are individual squads, guns, AFV's, or other combat vehicles such as halftracks and armoured cars. Ground elements consist of manpower and equipment. Each ground element has attributes of speed, size and armour, which is zero for all ground elements except for AFV and other combat vehicles. Ground elements are equipped with devices that represent the actual weapons they would fire (or throw/emplace for devices such as grenades and satchel charges) during combat. For AFV and combat vehicles, the equipped devices are considered part of the vehicle and may have their rate of fire modified to reflect the restrictions of operating the device inside the vehicle. The manpower that is part of the AFV or combat vehicle ground element is inside the vehicle operating it and employing the equipped devices. For other types of ground elements, the manpower employs the equipped devices directly, whether the device is a 150mm Howitzer or a hand grenade. Large (20mm or greater) direct fire devices may have a positive modifier that increases the accuracy of the device to reflect both a more stable firing platform and superior optics. Each device in turn is rated for range, accuracy, rate of fire, ability to affect different types of targets (air, personnel, vehicles), and ability to penetrate armour.

7.2.2. SUPPORT SQUAD GROUND ELEMENTS

A significant number of ground elements in all units are support squads, which provide the administrative and logistical backbone

required for a unit to operate effectively, to include fatigue reduction. Note that, despite the similarity in name, support squads and support units are different entities. Just like any other ground unit, support units are made up of a number of ground elements, with a significant number of those ground elements being support squad ground elements. While each unit has a TOE for support squad ground elements, the actual requirement for support squads, listed by 'NEED' in the unit's detail window, is based on the current strength of the unit, to include a requirement for one support squad for every 20 vehicles in the unit, and is recalculated during each logistics phase. The support need of an air base unit is based on both the number and type of aircraft and anti-aircraft ground elements attached to that unit. If a HQ unit has fewer support squads than its 'NEED' its leader will have their admin skill rating decreased when conducting admin checks. If losses to the rest of the unit result in excess support squads, some may be converted to rifle squad ground elements or returned to the manpower pool during the replacement phase (20.5).

7.2.2.1. HILFSWILLIGER (HIWIS)

Hilfswilliger (auxiliary volunteers), known as Hiwis, were soldiers and civilians, mostly Russian prisoners, that served as support personnel for German units during WWII. Generated from captured manpower, Hiwi ground elements are equivalent to support squad ground elements and provide the same amount of support and engineer values as a normal support squad. Since they mainly served on the Eastern Front, no new Hiwi ground elements will be produced in Gary Grigsby's War in the West. Any existing Hiwis will be listed in the production screen and annotated as part of the Support ground elements of the applicable unit's detail window.

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Hiwi's have been removed from the game. If Hiwi's are created in the editor, they are converted into normal support squads when a scenario is loaded.

7.2.3. TABLE OF EQUIPMENT (TOE)/UNIT LEVEL ORDER OF BATTLE (OB)

The number and type of ground elements in a unit is determined by its Table of Equipment (TOE), which can be actual or prescribed as well as listed using either generic or specific types of ground elements. The prescribed TOE lists the ground elements the unit would contain if it was at 100 percent manpower and equipment. The actual TOE lists the ground elements that are currently in the unit. The generic TOE, referred to as TOE, lists the type of ground element, for example, medium tank ground element or heavy artillery ground element, while the specific TOE, referred to as TOE (OB), lists the actual ground element, for example Panzer IVh medium tank and 105mm howitzer artillery ground elements. Note that the term TOE (OB) is used to differentiate between the generic and specific type of TOE because the term for the specific TOE in the game program and the game editor is OB, which describes the unit level Order of Battle. There is a prescribed TOE for every type of ground unit in the game and that unit's detail window displays the overall percentage of the actual TOE compared to the prescribed TOE as well as a link to a detailed ground element by ground element TOE comparison (26.3.24), which also links to the TOE upgrade window if applicable (26.3.25). The unit detail window is in TOE (OB) format, the TOE window is in TOE format, and the TOE Upgrade window is in the TOE (OB) format. The computer will use a unit's actual TOE as compared to its notional TOE to determine what ground elements will be provided as replacements during the logistics phase (20.4.2). The actual TOE of a unit will often not match its current prescribed TOE. This can be for numerous reasons, to include losses, unavailability of replacements, transition to an upgraded TOE and even downgrade of specific ground element types due to a surplus of old equipment and a lack of new equipment.

The number of men listed in the unit detail window showing the actual TOE (OB) does not include the manpower in support units that are attached to the unit. However, the manpower numbers displayed in the unit bar do include the support units that are attached to that unit.

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On the unit TOE screen, in the unit's actual TOE, substituted elements appear with an * sign.

7.2.3.1. TOE UPGRADES

Prescribed ground unit TOEs may change during the game, resulting in an upgrade in the applicable unit's actual TOE. Any resulting change in ground elements will generally take place gradually over a number of turns rather than all at once. A unit will not change its TOE if it is more than ten hexes from a depot. Note that units in the East Front box (23.0) automatically meet this requirement as they are deemed to be within 10 hexes of a depot. TOEs are segregated by type of unit and time of the War. For example, there is a prescribed panzer division TOE for every year of the War. Not only are there separate TOEs for unit types (e.g. armour versus infantry) but separate TOEs even within types. For example, the elite SS divisions at times will have three different TOEs running simultaneously. Players can view future upgrades by accessing a particular units TOE windows (26.3.24 and 26.3.25).

When a TOE upgrade occurs, ground elements will be sent back to the pool if there is none of the same generic type of ground element (i.e. AT-gun, Heavy Tank) in the new TOE. Otherwise they remain and thus can cause some types to exceed 100 percent of the new TOE. A specific type of ground element is not eligible for additional replacements, however, until it falls below 100 percent of its prescribed allowance. In addition if a unit contains more than 125 percent of the TOE need of a specific ground element, there is a chance each turn that the unit will return some of the over-strength ground elements to the production pool.

7.2.4. GROUND ELEMENT UPGRADE/DOWNGRADE AND SWAPS

Ground elements may change to different ground elements of the same or a different type during the ground element segment of the player's logistics phase (4.2). In the upgrade sub-segment, the ground element may upgrade in accordance with its upgrade path as listed in the ground element detail window (26.3.21) and the city production list window (26.3.4). It may also downgrade to older equipment (21.1.10). Many upgrades will remain within the same ground element type (e.g. Rifle Squad, Medium Tank, Heavy Artillery, etc.), but some will result in a change of type, including AFV in which the upgrade is based on the equipment chassis (i.e. Panzer 38(t) Light Tank to Marder III Light Tank Destroyer).

In the swap sub-segment, the computer may change out existing ground elements with ground elements of the same type, but not necessarily along the upgrade/downgrade path, though priority will be given to newer equipment. For example, a Panzer IVg is a medium tank ground element, which upgrades to the Panzer IVh and downgrades to the Panzer IVf2. In the swap sub-segment, however, Panzer IVg ground elements may be changed out to another medium tank, such as a Panzer IIIj L/60, depending on the availability of medium tank equipment in the production pool.

7.3. DEPLETED AND UNREADY UNITS

7.3.1. DEPLETED UNITS

Units at 10 percent or less of TOE are in a depleted status, have no ZOC and will automatically displace if they end up next to an enemy unit and not stacked with a combat unit that is in a ready or unready status. Note that there are instances, such as if a unit becomes depleted during the air execution phase, where a depleted unit can end up next to an enemy unit and not automatically displace. Displacement will then occur when an enemy unit moves next to such a unit. These units are listed as "Depleted" and if set to Refit then they will have two asterisks next to the word Refit (Refit**).

7.3.2. UNREADY UNITS

Units that have the sum of their current morale and actual TOE percentage equaling less than 90 are in an unready status. Unready combat units do have a ZOC, but may only conduct an attack if they have not expended any movement points during the turn (15.6.3). These units are listed as "Unready" and if set to Refit then they will have one asterisk next to the word Refit (Refit*).

7.4. SUPPORT UNITS

Support units are single purpose independent battalions, brigades and regiments of various types, to include artillery, howitzer, mortar, rocket, anti-tank, anti-aircraft, ski, engineer, sapper, tank, tank destroyer, construction, and labor groups. With the exception of construction battalions, which can be automatically detached to repair rail lines, support units will not appear on the map, but will be attached to headquarters and certain combat units and will be listed in the detail window of the unit to which they are attached. Rules for attachment and transfer of support units can be found in sections 7.5.2 and 7.7.3. Construction and labor support units are used to assist in the building of hex fortification levels and the repair of rail lines. All other support units are used to assist combat units in battle, either from an eligible headquarters unit not more than five hexes away from the battle, or from being directly attached to a combat unit participating in the battle (15.4).

Support units are always in refit status (20.5.6), with the exception of detached construction battalions. Though they have no organic movement capability, support units will consume supplies and fuel and gain fatigue when units to which they are attached are moved. They will also take combat and non-combat losses and suffer retreat attrition along with the unit to which they are attached. Attaching or recalling a support unit to or from an HQ or combat unit will use up freight points, to include using port freight points if the transfer is over a body of water.

V1.00.11 – 14 January 2015

Support units and Refit – The rules were incorrect and support units were not considered to be in refit mode. Now, support units that are set to supply priority 4 will be treated as if they were in refit mode.

7.4.1. ANTI-AIRCRAFT SUPPORT UNITS IN CITIES

Antiaircraft (AA) or Flak type support units can be assigned directly to a town, city or urban hex for air defense and can be transferred from one city to another or back to their highest HQ unit. Though listed in the city detail window as assigned, AA units will remain attached to their original Headquarters unit, but will have a 'c' in front of their name in the HQ unit detail window. In addition, AA units assigned to cities will be listed in the Commander's report with the applicable city in the HHQ column. German and Western Allied AA units can be assigned from their HQ unit to any friendly town, city or urban hex. Axis Allied flak units may be assigned from the applicable High Command HQ unit, but only to town, city or urban hexes of that particular nationality. Transferring an eligible AA unit from a HQ unit to a city costs 1 AP, except for railroad flak units which cost 0 AP.

To reflect the political cost of decreasing urban air defense, AA units in town, city or urban hexes can only be transferred back to their highest headquarters at a cost in admin points (12.1.2). The AP cost to transfer a flak unit from one city to another is 1 AP, except for railroad flak units which cost 0 AP. To move an AA unit out of a city to the highest level HQ select the X next to the AA unit name from the city detail window. It costs 50 AP to move a Luftwaffe (LW) flak regiment out of a city, and 15 AP to move a LW flak battalion. It costs 10 AP to move a non-LW flak regiment and 3 AP to move a non-LW battalion. A specific support unit attachment can only be transferred once per turn, they will suffer a -1 for admin rolls on the turn the change was made and will

be marked with an asterisk in the applicable unit detail window to denote that it cannot be transferred again that turn.

AA units attached to town, city or urban hex may be destroyed if the hex is captured or destroyed/removed as applicable if in an Axis allied country that surrenders (18.1). A text message will display when AA units in cities are destroyed due to the city being captured. Mobile flak in cities may escape to a nearby HQ when the city is captured if that hex is not isolated. The probability of escaping is dependent on the type of AA unit as follows:

Type (0) non-motorized (1) - - - 0 percent

Type (1) non-motorized - - - 15 percent (2)

Type (2) and Type (3) non-motorized - - - 66 percent (2)

Type (4) non-motorized - - - 100 percent if adjacent to a connected rail hex. This type of AA unit represents a Mobile Railroad flak unit.

Note

(1) Fixed flak units (flak units with motorization type 0) cannot be moved. Examples include German flak towers and British static city AA units. Flak unit with motorization type none are fixed in place and cannot be moved in any way or disbanded.

(2) Unit must be in a hex that is not isolated and within ten movement points of a railhead (20.2).

7.5. COMBAT UNITS

Combat units are the on-map regimental, brigade, divisional and Corps sized units that manoeuvre to take control of enemy territory and engage enemy units in battle. Combat units that are not in a routed or depleted state have a positive, non-zero Combat Value (CV) and exert a Zone of Control (ZOC) into their six adjacent hexes (6.3.2). Combat units are the only ground units that can convert enemy controlled hexes to pending friendly hexes (6.3.3). Certain combat units can build up into larger size units or break down into smaller size units (7.5.3). There are several types of combat units that have special characteristics or can perform specific missions. Non-motorized combat units can be transported by air between friendly air base units and airborne units can be air dropped into another hex. Fortified Zones are immobile combat units that are used primarily to build fortification levels. Some combat units, to include fortified zones and most Divisions can directly attach support units, which are automatically committed to any battle they participate in.

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When a merge unit is executed, any elements over 100% of TOE will be sent back to the pool (damaged elements first).5

7.5.1. FORTIFIED ZONES

Fortified zones are special combat units designed to supplement regular combat units by assisting in the construction of fortified hexes, helping to avoid the decay of fortification levels and adding additional support units to the defense of the hex it occupies. Fortified zone units have zero movement points and can never move. Fortified zone units can be created through the expenditure of admin points by either player by selecting a hex and then selecting the "Create fortified unit" button on the map information tab (5.1.2.1). Fortified zones can be placed in any friendly controlled hex, with the exception that Players may not build Fortified units in a hex next to an enemy combat unit unless that hex is also occupied by a friendly combat unit. Axis and Western Allies fortified zones will be German and US nationality respectively. Fortified units can be disbanded like any other unit, with the exception that they do not need to be three hexes away from enemy units (10.3). Fortified zone units can directly attach up to three support units of any type.

Fortified zone units can set their Max TOE level to 1 (only airbases and fort units may have their Max TOE set below 50). Units with their Max TOE set below 50 will not receive a morale increase in the logistics phase (this includes rebuilt units with Max TOE set to 0). Note that since Depleted units will not prevent a fort level from decaying, it is important to keep the actual TOE of a Fort unit over 10 percent in order for it to prevent fort level decay and it is suggested that Max TOE be set to at least 15 for fortified zone units.

NOTE

The computer ignores APs for fortified zone unit building, but is not programmed to abuse this by building lots of fortified zones.

7.5.2. ATTACHMENT OF SUPPORT UNITS TO COMBAT UNITS

The player can manually attach support units (SU) to some types of combat units (CU). Unlike support units attached to headquarters units that require passing of a commitment check before they can be committed to a battle, support units directly attached to combat units are automatically committed, though only to a battle in which that combat unit is a participant (15.4). Direct attachment thus provides certainty at the expense of flexibility. Divisions can directly attach up to three support units while numbered regimental/brigade (i.e. 3/129 regiment) can attach one support unit, but they cannot attach construction, labor, artillery, mortar, and rocket support units, or support units with the designations LW. Fortified Zone units can attach up to three

of any type support unit.

V1.00.13 – 26 January 2015

Support Units (section 7.5.2) - Italian divisions and divisional breakdowns can now attach Italian and German support units. German divisions and divisional breakdowns can now attach Italian support units. When Italy surrenders, any German support units attached to an Italian unit will be placed in a German HQ.

V1.00.44 – 9 June 2015

Added ability to attach construction units to cities at the cost of 1 AP point per unit. These are attached to cities the same as flak from the City Detail screen. They can be sent back to their HQ at no AP cost by pressing the X next to their name in the City Detail screen. Construction units in cities will automatically attempt to repair factories (including ports and railyards), and repair/expand airbases. Units in cities will be used first, but if deemed insufficient, additional construction units may still be summoned automatically to the hex. Units attached to cities will not be used by the automatic rail repair system.

Now all brigade and regiment sized units can attach one support unit. Multi-role units that convert to off-map status will send any attached support unit to the HQ.

V1.01.01 – 30 September 2015

Support Unit Attachment – Now, independent brigades may attach 2 support units. Other support limits are unchanged, so they are:

- a. Divisions – 3
- b. Independent Brigades – 2
- c. Independent Regiments – 1
- d. Division Breakdowns (brigade or regiment) - 1

V1.01.31 – 9 April 2016

Rule Change - Allow regimental size non-support units to attach 1 support unit.

7.5.2.1 SU TO CU ATTACHMENT PROCEDURE

Players can physically manage support unit attachments through the detail window of eligible combat units (26.3.14). The "ASSIGN" button can be selected to access the "PICK SUPPORT UNIT TYPE" window to select an available support unit to transfer to that combat unit. To transfer the attachment of a support unit from a combat unit to another headquarters unit, the player selects the support unit to bring up its detail window and then selects the HHQ or OHQ link to bring up a list of eligible headquarters units to which it can be transferred. There is no automatic transfer of support units to or from combat units.

7.5.2.2 SU TO CU ATTACHMENT RESTRICTIONS

There is no range limitation to the transfer of support unit attachments; however, combat units must be in supply in order to transfer support units. A specific support unit attachment can only be transferred once per turn, they will suffer a - 1 for admin rolls on the turn the change was made and will be marked with an asterisk in the combat unit detail window to denote that it cannot be transferred again that turn. Attaching a support unit to an airborne unit or unit prepping for an amphibious invasion will result in the loss of 10 preparation points, though prep points will never drop below zero.

7.5.3. COMBAT UNIT BUILDUP, BREAKDOWN AND MERGING

Certain combat units can be built up into larger formations or broken down into smaller units. In addition, an equivalent size or smaller combat unit can be merged into another combat unit of the same type, eliminating the former and strengthening the latter. Units building up or merging must be in the same hex in movement mode. Unit buildup or breakdown is accomplished by selecting the unit(s) and then either left clicking the buildup/breakdown button on the map information tool bar (5.1.2.1) or using the hotkey 'b'. Breakdowns cannot exceed stacking limitations, so combat units can only breakdown if they are the only unit in the hex. Routed and frozen units cannot buildup, breakdown, or merge.

7.5.3.1. UNIT BREAKDOWN AND BUILDUP

Certain divisions can breakdown into three regimental equivalent combat units numbered 1/2/3. The same three sub-units can be built back up into a division if they are in the same hex. Broken down divisions with regiments designated 1/2/3 may assign one support unit to each regiment. When the parent division is first broken down, any attached support units will be divided up one per regiment. If the parent division is reformed, all support units attached to the 1/2/3 regiments will once again be attached to the parent division. Note that some Allied divisions will breakdown into three brigades rather than regiments.

7.5.3.2. RULES FOR REGIMENTAL AND BRIGADE SIZE UNITS

Combat units smaller than a division, to include broken down units, do not take control of hexes in their ZOC, just hexes that they move through (6.3.3). These regimental/brigade size units pay one additional MP when moving into an enemy hex. Numbered (1/2/3) regiments or brigades broken down will be bordered in blue on the map area when one or more of the broken down units from the same larger unit has been selected.

V1.00.00 – 21 November 2014

When a merge unit is executed, any elements over 100% of TOE will be sent back to the pool (damaged elements first).

7.5.3.3. MERGING UNITS

Under certain circumstances, two combat units of the same type can merge together, resulting in one stronger unit. In order to merge, there must be another unit of the same type (infantry, armour, motorized, etc.) in the hex. The merging unit must be of smaller or equal size to the gaining unit. For example, a brigade could merge into another brigade, division or corps, but a division could not merge into a brigade. In order to merge, the sum of the ready ground elements of the two units cannot exceed 100 percent of the TOE of the unit that will remain. If the merging unit is a smaller size unit, than only one third of its TOE percentage counts. For example, if a brigade with 90 percent of its TOE was merging into a Corps with 70 percent TOE, the sum would still meet the requirement as 90 divided by 3 would be 30, which added to 70 is just 100. When the merge is completed, all elements of the merging unit will be placed in the gaining unit, and the merging unit is considered destroyed and permanently removed from the game. Merging is accomplished by selecting the 'MERGE' link in the detail window of the combat unit (26.3.14) that will be merging with the other combat unit.

7.6. MULTI-ROLE UNITS

Multi-Role units are units that can change during the game from an "on map" combat Unit to a support unit. In order to convert from a combat unit to a support unit, the unit must be stacked with the HQ unit to which it is attached. 'Convert' then becomes a selectable option on the unit's detail window. Once the unit is a support Unit it may be attached directly to another combat unit. When attached to a unit or HQ unit as a support unit, it may convert to an on map combat unit if it would not cause an overstack situation. When it converts to a combat unit, it will be placed in the hex with the HQ unit and will have one movement point remaining. When a multi-role unit converts to a support unit, it is flagged with an asterisk and will not be able to be reassigned elsewhere during the current turn. Multi-Role units cannot convert while embarked/loaded on ships or trains. Some Multi-Role units will be split into three equal units when they are converted to support units and will be designated Multi-Role/3 on their unit detail window. All three parts of the multi-role unit must be attached to the same HQ or combat unit in order for the unit to be converted back into a combat unit. Broken down regiments and brigades will display as battalion sized units.

Ranger, Commando and SSF multi-role units that are attached directly to an amphibious HQ unit executing an amphibious invasion have the capability of making a special "supporting" landing (16.7.2).

Multi-Role units that arrive as reinforcements will be placed on the map as a combat unit (19.1.1) rather than attached to an HQ unit as a support unit.

PLAY TIP

Remember in order to convert from an on map unit to a support unit, the unit must first be stacked with and attached to an HQ unit. For Ranger, Commando and SSF units attached to Amphibious HQ units, they need to be in a port hex stacked with the Amphibious HQ unit to convert.

7.7. HEADQUARTER (HQ) UNITS

Headquarter units provide a chain of command for command and control of units in Gary Grigsby's War in the West. With the exception of High Command headquarters units, all units, to include support and air group units, have a higher headquarters unit to which they are attached. The current command and control arrangement for the phasing player can be viewed either through the Order of Battle (OOB) screen in the info screens tab (5.1.2.2) or through the Commanders Report (5.4.9). For on-map units, this immediate higher headquarters unit can provide logistical and combat support if within the applicable range. There is no limit to the number of combat units that can be attached to a Headquarters unit, however, ground headquarter units that exceed their normal capacity, termed command capacity, will become less effective. Most combat units will normally be attached to lower level headquarters units, but direct attachment of combat units to any ground headquarters unit is permitted. Note that air headquarters units, air base units, and rail repair units cannot attach combat units and each type has different attachment rules and restrictions (7.7.1). With the exception of air base units, any headquarters unit can attach support units, though there are some restrictions based on both the type of HQ units and the type of support units (7.7.3). Note that high command (type 1) and air headquarters units of all types cannot be disbanded. Normal a HQ unit is commanded by a leader of the same nationality (exception 11.4.3.2).

v1.01.20 – 1 February 2016

Added HQ unit dispersion factor, which is reducing amount of squads and attached units can be targeted and HQ's flak fire ability. Dispersion factor depends on the level of HQ and gets doubled up when it is within 5 hexes of an enemy ground unit.

7.7.1. HEADQUARTER UNIT TYPES

There are seven types of headquarter (HQ) units as follows:

High Command headquarters units (Type 1): Each nation represented in the game has High Command headquarters units, one of to which all other units on that side are ultimately attached. These headquarters units do not have a higher headquarters and effectively report to themselves. High Command headquarters units cannot be disbanded. Unfrozen units can be transferred from these headquarter units even if the HQ unit is frozen. These are ground and air headquarters units with large capacities. The following headquarter units are designated High Command headquarters units:

OKW – Germany

Italian High Command – Italy

SHAEF – USA

AFHQ – Britain

UK Home Forces HQ – Britain

RAF HQ – Britain Air HQ

USSTAF – US Air HQ

Army Group/OB West/OKL/Mediterranean Allied Air Force/Regia Aeronautica (Type 2): These are ground or air headquarter units with large capacities that are attached to a High Command (Type 1) headquarters unit and normally serve as higher headquarters to the rest of their nations units. Note that specifically for OB West, some Army Group HQ units will begin a scenario attached to OB West, but no other AGs may be attached to OB West. In this case, the Germans have an extra command layer (OKW still comes into play as a backup after OB West).

Army, Air Force, Air Fleet or Air Command/WMBef /German Luftflotte/Italian Luftwaffe (Type 3): Army headquarter units are ground headquarter units with medium capacities that are attached to either type 1 or 2 HQ units. Though they are ground units, Air headquarter units do not have any capacity limitations and can only attach lower level air headquarter units, to include air base units, as well as anti-aircraft support units (8.3).

Corps/German LW Commando West, Fliegerkorps and Jagdkorps Air HQ (Type 4): Corps are the lowest level ground headquarter units with fairly small capacities. Type 4 air headquarter units are the lowest level air headquarters.

Air Base Units (Type 5): Air base units are different than other headquarter units in that their purpose is to support air group units. They are stationary installations and new Air Base Units can be built during the game. Air base units are the only on-map units that air group units can be attached. Air Base Units cannot attach any combat or support units.

Rail Repair headquarter units (Type 6): These are rail repair units that also function as headquarters for construction and labor support units. Only construction and labor support units can be attached to Rail repair headquarter units (14.2.2).

Amphibious headquarters units (Type 7): Amphibious HQ units do not have leaders and must be attached to a High Command (Type 1) HQ unit. Amphibious HQs are used for the amphibious movement of combat units and the naval transport of units and supply over beaches, represented by a temporary port, (when a permanent port is not in the amphibious invasion target hex. Amphibious HQ units may have attached naval support groups representing ships to provide artillery support for amphibious assaults and ground combat in adjacent land hexes. Amphibious HQ units will also have a number of transport and cargo ships assigned to support lift required for amphibious invasions and maintenance of temporary ports. Amphibious HQs may only use amphibious and naval strategic movement. They may never enter a non-port land hex. They may enter a ferry hex and assist units attacking over a ferry hex. Neither enemy supply trace nor enemy naval transport can pass through hexes adjacent to an Amphibious HQ unit and an amphibious HQ unit will destroy any enemy units embarked on ships in water hexes to which they move adjacent. In addition, Amphibious HQ units will bombard any enemy units in adjacent land hexes at the end of that players air execution phase, potentially causing damage to ground elements.

7.7.1.1. RENAMING OF AMPHIBIOUS HQ UNITS

Certain amphibious HQ units will be renamed during the game.

1. On the first turn in February 1944 the three British Amphibious HQ units will be renamed.

TF 545A becomes TF 'J'

TF 545B becomes TF 'G'

TF 545C becomes TF 'S'

2. On the first turn in April 1944 two US amphibious HQ units will be renamed.

TF 81 becomes TF 84

TF 86 becomes TF 87

7.7.1.2. HEADQUARTERS UNITS SUPPLY PRIORITY SETTINGS

Type 1 through 4 HQ units can set the supply priority for all units that are directly attached. Type 5 (air base units) and type 6 (rail repair units) are not considered HQ's for supply priority purposes. (20.0).

7.7.2. ATTACHMENT OF COMBAT UNITS TO HQ UNITS AND COMMAND CAPACITY

While there is no limit to the number of combat units that can be attached to an eligible headquarters unit (combat units cannot

attach to air headquarters, air base or rail repair units), headquarter units do have a command capacity (CC) rating that is expressed in command points (CP) and may change depending on the year. Command points are determined by the size of the attached combat unit. Calculation of command capacity includes all combat units attached to all units in the chain of command of the applicable HQ unit. For example, the current command capacity of an Army Group HQ unit would include the command points from all combat units directly attached, combat units attached to any attached Army HQ units and combat units attached to any Corps HQ units that are attached to the Army HQ units. HQ units whose total command points exceed their command capacity rating will become less effective, which will be reflected by an increased difficulty in passing leader skill rating rolls such as an admin or initiative check. Leaders of headquarters units where the number of attached units exceeds the command capacity will have their chances of making the leader rating check reduced with the more excess units, the less the chance of a successful check (11.3.1).

Combat units may only change their command once per turn, noted by an asterisk, and they will suffer a - 1 penalty for admin rolls on the turn the change was made. Combat units can be attached to an eligible headquarters unit either manually through the combat unit's detail window HHQ link (26.3.14) or through use of auto-attachment (7.8).

7.7.2.1. COMMAND POINTS

The following table displays the command points (CP) for each size of combat unit:

COMBAT UNIT SIZE	COMMAND POINTS
Brigade/Regiment	1
Fortified Zone	1
Division	2

7.7.2.2. COMMAND CAPACITY

The following table displays the command capacities for different types of headquarters units:

COMMAND CAPACITY	DATE	
HQ Unit Type	7/43-3/44	4/44-9/45
Corps (Type 4)	10 CP	11 CP
Army (Type 3)	30 CP	33 CP
Army Group (Type 2)	120 CP/90 CP (1)	132 CP/99 CP (1)
High Command (Type 1)	900	900
OKW, OB West, SHAEF, AFHQ (Type 1)	~ CP (1)	~ CP (1)

Notes

(1) German Army Groups have the higher of the two capacities while Allied Army groups have the lower capacity.

(2) High Command HQ units have infinite command capacity (they will never be considered overloaded). This is shown on screen as a command limit of 999.

7.7.3. ATTACHMENT OF SUPPORT UNITS TO HEADQUARTER UNITS

Support unit attachments can be transferred between headquarters units manually during the action phase and automatically during the logistics phase. Support units attached to combat units and town, city or urban hexes can be manually transferred back to headquarters units during the action phase. There is no range limitation to the transfer of support unit attachments; however, headquarters units must be in supply in order to transfer support units and the transfer will use freight points. Changing AA support unit attachments may require the expenditure of admin points (12.1.2). A specific support unit attachment can only be transferred once per turn and will be marked with an asterisk in the headquarters unit detail window to denote that it cannot be transferred again that turn. In addition, support units will suffer a - 1 penalty for admin rolls on the turn the change was made. There is no limit to the number of support units that can be attached to a single headquarters unit, though a large number of non-construction support units can impact the commitment of support units during combat (15.4). Labor battalions can be attached manually to any friendly HQ no matter the nationalities of the labor unit and the HQ unit.

V1.00.44 – 9 June 2015

Added ability to attach construction units to cities at the cost of 1 AP point per unit. These are attached to cities the same as flak from the City Detail screen. They can be sent back to their HQ at no AP cost by pressing the X next to their name in the City Detail screen. Construction units in cities will automatically attempt to repair factories (including ports and railyards),

and repair/expand airbases. Units in cities will be used first, but if deemed insufficient, additional construction units may still be summoned automatically to the hex. Units attached to cities will not be used by the automatic rail repair system.

7.7.3.1 SUPPORT UNIT ATTACHMENT RESTRICTIONS

There are some attachment restrictions based on type of headquarters unit. Air headquarters units are limited to attaching only anti-aircraft support units and air base units cannot attach any support units. Rail repair units can only attach construction battalions and labor groups, and while these support units can be manually transferred from the rail repair unit, there is no ability to transfer additional support units to the rail repair unit.

7.7.3.2. AUTOMATIC ATTACHMENT OF SUPPORT UNITS

Each eligible headquarters unit can have its support unit level set by the player by using the ADD or SUB buttons located in the headquarters unit detail window (26.3.17). The level setting indicates the number of each type of support unit that the computer will attempt to provide to that particular headquarters unit, based on availability. For example, if the player sets "Support Level" to 3 the computer would attempt to provide 3 support units of each type, to include Armoured, Anti-Tank, Artillery, Anti-aircraft, Rocket, etc. Frozen HQ units and frozen support units cannot be set for auto attachment.

This process occurs automatically during the phasing player's logistic phase and consists of two cycles during which support units are moved first up the chain of command (excess) and then down the chain of command (demand). Support units in an unready status will be transferred to the applicable High Command headquarters unit during the first cycle. Since there is no logistics phase prior to the first player-turn on turn one, there is no auto move of support units in the first-player turn of each game. The entire automated support unit transfer system can be disabled by checking the appropriate sides 'Lock HQ Support' buttons in the Game Options screen (3.3.3). In addition, the player can disable the automated transfer function for a particular headquarters unit by selecting the 'LOCKED' button in its detail window. Note that all headquarters units subordinated to a particular High Command headquarters unit will be locked out of the automatic attachment transfer of support units if their High Command headquarters unit has its Support Level set to "LOCKED." In addition, if any of the higher headquarters units in a particular HQ unit's chain of command is set to "LOCKED," that headquarters unit will not have the ability to utilize the automatic transfer of support units. Players can use the Order of Battle (OOB) screen (26.3.1) to get a big picture view of their side's chain of command and the filter functions of the Commander's Report (26.2) to view a specific higher headquarters unit and its subordinate HQ units. For example, to view the Army Group B command chain, do the following:

Open Commander's Report (info screens tab or hotkey c)

Select HQ List tab

Select Army Group B (This takes you back to Unit List tab with all units subordinated to AGB selected)

Select "NONE" under 'UNIT DISPLAY FILTERS'

Select Crps, Army, ArmyGr under 'UNIT DISPLAY FILTERS'

Select HHQ column header as necessary to end up with sort with AGB at top of list and all other subordinate HQ's sorted by their next higher headquarters unit.

7.7.3.3. CONSTRUCTION AND ENGINEER PERMANENT SUPPORT LEVELS

Construction and engineer support units have permanently assigned support level settings that override player support level settings, with the exception of "LOCKED," which will stop the automatic transfer of any support units from the "LOCKED" headquarters unit. The permanent support level settings for construction and engineer values are as follows:

HEADQUARTERS TYPE	CONSTRUCTION	ENGINEER
High Command (Type 1)	0	0
Army Group (Type 2)	16	4
Army (Type 3)	3	3
Corps (Type 4)	2	2

GAME PLAY TIP:

Want to minimize the number of support units in a HQ unit, but still allow automatic transfer through that HQ unit? Use a setting of '0' so that the only support units the computer will send to the HQ will be the permanent levels of construction and engineers.

7.7.3.4. MANUAL ATTACHMENT OF SUPPORT UNITS

Players can physically manage support unit attachments through the detail window of eligible headquarters units (26.3.17). The "ASSIGN/FORM" button can be selected to access the "PICK SUPPORT UNIT TYPE" window (26.3.16) to select an available support

unit to transfer to a headquarters unit (from up the chain of command of HQ units). To transfer the attachment of a support unit from a headquarters unit to another headquarters unit, the player selects the support unit to bring up its detail window and then selects the HHQ or OHQ link to bring up a list of eligible headquarters units to which it can be transferred. Note that whenever a support unit changes its HHQ from its unit detail screen, the game navigates to the unit detail screen for the old HHQ of the support unit. To prevent the computer from transferring the support units that have been moved manually, the player can either increase the applicable headquarters unit's Support Level to account for the newly attached support units or change the Support Level to "LOCKED," which will prevent that headquarters unit from automatically returning any support units or receiving any additional support units during the logistics phase (The exception is Construction and Engineer support units per 7.7.3.3)

7.7.4. PROVISION OF HQ SUPPORT AND COMMAND RANGE

Unit effectiveness is affected by the number of support squad ground elements (7.2.1.1). A headquarters unit can provide assistance to its attached units' support squad needs using excess internal support squad ground elements, however, the headquarters unit must be within a certain distance from the attached unit. This distance, termed "Command Range," is measured in hexes and is based on the type of headquarters unit providing the support squads as follows:

TYPE OF HEADQUARTERS UNIT	COMMAND RANGE IN HEXES	COMMAND MODIFIER (11.3.2)
High Command (Type 1)	90	Divide Range by 4
Army Group (Type 2)	45	Divide Range by 3
Army (Type 3)	15	Divide Range by 2
Corps (Type 4)	5	Divide Range by 1
Air (Any Type)	90	(1)

Note

(1) Use the command modifier for the type of HQ unit involved, however, for purposes of Leader checks, any check of an air command HQ leader will treat the range to the HQ unit as 0 if it is less than 91 hexes to the HQ.

Any headquarters unit in a unit's chain of command that is in command range can provide support with its excess support squad ground elements. This provision of support occurs automatically during the phasing players logistics phase. To provide support help, an HQ unit must be able to trace a land path to the unit being supported. The exception is that a non-isolated HQ unit may send support up to 3 hexes to a non-isolated unit no matter the terrain (i.e. may go through water/impassable hexes).

Range also has a contiguous effect on leader rating checks, with the exception of morale and naval checks. The closer the higher HQ is to the combat unit involved, the higher chance that the higher HQ leader's rating checks will be successful. Per the command modifiers above, the range effect depends on the level of the HQ unit, so that higher level HQ units can be located further away (11.3.2).

HQ's will provide support help to units as long as they are within the command radius of the HQ (5 for corps, 15 for army, 45 for Army Group and 90 for high level HQs). During the logistics phase, support from HQ units is passed down from HQs. When viewing an HQ's unit detail screen, the Support/Need numbers shown are the number of support squads the HQ used for itself versus the need it had in the last logistics phase. A HQ will always satisfy its own need before using any of its support squads to help units under it. If the Support value shown is higher than the need, then it means the HQ had excess support that it did not give out to units. HQs whose support equals its need, have given out all their support squads as help and there are probably units in the chain of command that are short of help. The unit detail screen Support/Need for non-HQs shows the support received during the last logistics phase (including organic support and HQ support help) and the need during the last logistics phase. Specific info on the HQ unit detail screen regarding support help includes:

Total Support: Total support used (organic plus HQ help) by units in the chain of command under this HQ during last log phase.

Total Support Need: Total support needed by units in the chain of command under this HQ during last log phase.

Organic Support: Total available support squads in units in the chain of command under this HQ during last log phase.

7.7.4.1. COMMAND RANGE EXCEPTIONS FOR LEADER CHECKS

Units in ports will be treated as if they are one hex from their attached HQ unit and all higher level HQ units in the chain of command for purposes of leader check. This prevents units in isolated ports from suffering a leader penalty when there is no stacking room to leave the HQ unit.

Units that are of the type Parachute or Air-Landing that are attached to an HQ that contains the name Airborne or Fallschirm are considered one hex from their attached HQ unit and all higher level HQs in the chain for the purposes of leader checks. This prevents units conducting an airborne landing from suffering a leader penalty as long as they are attached to an appropriate airborne type HQ unit.

GAME PLAY INFO

The above type of HQ support using support squad ground elements should not be confused with headquarter units providing support units during combat (15.4) or supply tracing and receiving (20.4).

7.7.5. HEADQUARTERS UNIT RELOCATION

The player can relocate most types of headquarters unit, to include rail repair units, but not fixed air base units, by selecting the "RELOCATE" button in the right upper corner of the HQ unit's detail window (26.3.17). Relocation is similar to a displacement move (15.11), but is a voluntary action and results in the unit being moved to a friendly town, city or urban hex that is in supply. The headquarters unit will have its movement points reduced to zero, but there is no relation between the relocation and normal movement. The headquarters unit and any attached support units will suffer retreat attrition (15.12) and any damaged aircraft in air group units attached to an air base unit that is relocated will be destroyed. The town, city or urban hex that the unit is relocated to will generally be to the east for the Axis player and to the west for the Allied player, but there is a random factor to the relocation so that the player cannot anticipate where the unit will end up.

GAME PLAY TIP

Though a headquarters unit can be relocated multiple times in a turn, relocation is generally only advised for isolated headquarters units you want to get out of a pocket immediately instead of waiting for the unit to be involuntarily displaced by enemy units. Regular movement is almost always preferable to relocation because the relocation movement is hard to predict and does cause retreat attrition to the headquarters units and any attached support units.

7.8. COMBAT AND HEADQUARTERS UNIT AUTO-ATTACHMENT

The auto-attachment function allows players to automatically attach combat and headquarters units to the nearest eligible headquarters unit by using the map information tab (5.1.2.1) Auto Assign Units button (hotkey g) while the unit is selected in Move mode (F1). The phasing player may use auto-attachment as many times as they wish during their turn provided the Move mode (F1) is selected. Using auto-attachment in no way precludes the player from manually attaching units, but units may only change their command once per turn.

7.8.1. AUTO-ATTACHMENT RULES

Auto-attachment occurs according to the following rules:

Division, brigade and regimental combat units will attach themselves to the nearest corps HQ unit. If an army or higher HQ unit is nearer than the nearest corps HQ unit, then the combat unit will attach to it instead. If a corps HQ unit and a higher HQ unit are equally distant, then the combat unit will always attach to the corps HQ unit. If two corps HQ units are equally distant from the combat unit, the computer will randomly determine to which corps HQ unit the combat unit will be attached.

Corps HQ units will attach themselves to the nearest army HQ unit. If an army group HQ unit or eligible High Command HQ unit is nearer than the nearest army HQ unit, then the corps HQ unit will attach to it instead. If an army HQ unit and army group HQ unit or High Command HQ unit are equally distant, then the corps HQ unit will always attach to the army HQ unit. If two army HQ units are equally distant from the unit, the computer will randomly determine to which army HQ unit the unit will be attached.

Army HQ units will attach themselves to the nearest army group HQ unit. If an eligible High Command HQ unit is nearer than the nearest army group HQ unit, then the army HQ unit will attach to it instead. If an army group HQ unit and an eligible High Command HQ unit are equally distant, then the army HQ unit will always attach to the army group HQ unit. If two army group HQ units are equally distant from the army HQ unit, the computer will randomly determine to which army group HQ unit the combat unit will be attached.

Air base units and their respective higher air HQ units attach in the same manner as combat units and their HQ units.

7.9. MOTORIZED AND NON-MOTORIZED UNITS

Motorized and non-motorized units are treated in different ways in terms of tactical movement and supply. Motorized units use vehicles and fuel for tactical movement, combat, and supply, while non-motorized units have far fewer vehicles and depend on supplies for tactical movement and supply. Players can verify whether a unit is motorized or non-motorized on the right hand side of the applicable unit detail window (26.3). In addition, there are four types of non-motorized units based on their relative mobility and the use of vehicles by ground elements:

- 0 – no vehicles (1)
- 1 – vehicles for supplies only
- 2 – vehicles for supplies and all non-infantry, non-infantry weapon elements
- 4 – Railroad Anti-aircraft (Flak) (2)

Notes

- (1) For anti-aircraft units, non-motorized 0 represent fixed/immobile flak emplacements like Flak Towers.
- (2) Can only move through non-damaged rail line hexes

8. AIR UNITS

There are three types of units that comprise the air force organizational and command and control structure; air group units, air base units and air headquarters units. In addition, each side has an off-map National Air Reserve for reinforcement arrival and training of new air group units. Section 5.3 describes how to use the interface to plan and execute air missions and section 17 discusses the rules regarding the conduct of air missions.

V1.00.29 – 19 March 2015

Added ability to have more than 23 air HQs in scenarios (added scroll bars).

8.1. AIR GROUP UNITS

Air group units are the tactical units that contain aircraft and conduct the various air missions. Each air group unit is designated by group type, which determines the maximum number of aircraft in the unit, and functional type, which determines the kinds of air missions the unit can undertake. The name of the air group unit usually indicates its function as well. Air group units consist of a number of the same type and model of aircraft that are categorized as ready, damaged or reserve. Aircraft are characterized by a number of attributes, to include speed, climb rate, maximum altitude, radius in miles, number of engines, armour rating, durability, manoeuvrability, and reliability. Aircraft carry devices such as machine guns, cannons, rockets, bombs, drop tanks and electronic warfare systems such as radar. Aircraft may have several different load outs of devices that can be selected through the Air Group Unit detail window (26.3.19). Pilots and air crews are assigned to air group units and their aircraft from the manpower pool, with pilots also being tracked individually.

V1.00.13 – 26 January 2015

Disabled the “no manpower” message that could appear when adding pilots to air groups on the CR screen.

V1.01.31 – 9 April 2016

Rule Change - Added an extra delay for overrun air groups. They are put back to the national reserve in 3 turns (was immediate).

8.1.1. AIR GROUP UNIT AIRCRAFT STATUS

Ready aircraft are available to fly in air missions that the air group unit is selected to conduct. Damaged aircraft require repair and are unavailable to fly, but do count against the maximum number of aircraft allowed by the group type. Damaged aircraft that were not repaired during the maintenance segments of the air execution phase may be destroyed (written off) during the logistics phase (4.2).. Older aircraft with low durability and low reliability have a greater chance of being written off. Aircraft are usually placed in reserve status due to a lack of aviation support at their assigned air base unit or a shortage of pilots in the air group unit. Reserve aircraft are categorized as unready and do not fly in air missions, but are considered flyable if the air base unit their air group unit is attached to is captured (6.3.5). Reserve aircraft are not counted against the maximum number of aircraft in the unit, but may be re-designated as ready aircraft during the logistics phase if the number of ready and damaged aircraft is below the maximum number of aircraft allowed in the unit. If the number of ready aircraft in an air group unit exceeds the maximum number allowed, aircraft designated as reserve in the air group detail window will automatically be sent back to the applicable production pool over a number of logistics phases, while the excess ready aircraft will be moved to the reserve designation over a number of logistics phases.

8.1.2. AIR GROUP UNIT MISSION SETTING

Air group units can be set to operate during day only, night only, or day and night (17.1.6). Alternatively, air group units can be set for either training, or rest missions. Rest means the unit does not fly at all. Training means that the pilots will all fly training missions (8.2.1). The mission setting may be changed on the CR screen (individually or in bulk using the mission setting function) or on the unit detail screen for the group (26.3.19). In the CR screen air groups in rest have their names in pink, while those training have their names in yellow (26.2.4).

8.1.3. AIR GROUP UNIT ATTACHMENT

Air group units are attached to Air HQ units that are capable of being issued air directives (5.3) and assigned to a particular air base unit. There is no limit to the number of air group units that can be attached to a particular air HQ unit. Though the air group unit and the air base unit to which it is assigned do not have to be attached to the same Air HQ unit, there is a maintenance penalty if they do not have the same air HQ unit (8.3.3). Air group unit attachment can be changed in the air group unit detail window (26.3.19). There is also a button in the air base unit detail window in the 'assigned' tab to change the HQ unit of all air groups located at the airfield to the same air HQ unit as the air base unit air HQ unit (26.3.18). The button reads "Change Air Group HQ to "name of HQ" (0)". The number in parentheses is the number of air group units that will change attachment. The display for the air group units assigned to the air base unit in the air base detail window annotates air group units that are not attached to the same air HQ unit. An asterisk (*) in front means that air group unit air HQ unit is not the same as the air base unit. Two asterisks (**) means the same as one asterisk, but indicates that the air group unit has already changed its attachment this turn and can't be changed again until the next turn.

8.1.4. AIR GROUP UNIT GROUP TYPES

Air group unit type designations are based on the maximum number of aircraft allowed in the unit, the type of aircraft, and the unit's nationality. The exact numbers vary by type of group and date and are determined by the current Aircraft Profile for each group, which lists the maximum size for each of three group sizes, corresponding to small, medium and large size groups. For example, a German medium bomber group unit would have a maximum size of 3 for a Schwarm, 9 for a Staffel, and 30 for a Gruppe while a German fighter group in July 1944 would have a maximum size of 4 for a Schwarm, 16 for a Staffel, and 68 for a Gruppe. Players desiring to know the standard sizes at different times of the war should go to the game editor aircraft tab, click on an aircraft in the list and then click on the Profile for that aircraft. This will give a max size and any changes in the max size with a date the change takes effect. To give the player an idea of the relative sizes of the three types of groups, below are listed the group names and sizes for the generic aircraft profiles of the major nations in the game.

8.1.4.1. AXIS AIR GROUP UNIT GROUP TYPES

Sezione = 4 aircraft (Italy)

Schwarm = 4 aircraft (Germany)

Squadriglia = 12 aircraft (Italy) (1)

Staffel = 12 aircraft (Germany)

Gruppe = 40 aircraft (Germany)

Gruppo = 36 aircraft (Italy)

Note

(1) Settings for Italian Fighter air group units as of July 1943.

8.1.4.2. WESTERN ALLIES AIR GROUP UNIT GROUP TYPES

Flight = 4 aircraft (CW, US)

Squadron = 16 aircraft (CW, US)

Wing = 48 aircraft (CW)

Group = 72 aircraft (US) (1)

Note

(1) Settings for US Fighter air group units as of July 1943.

8.1.5. AIR GROUP UNIT FUNCTIONAL TYPES

The air group unit functional type determines what air missions a particular air group unit can conduct based on the type of aircraft the unit contains (16). Below are all the types that may appear in the game along with the abbreviations found in the Commanders Report (26.2.4 Air Units tab):

Fighter (F)

Fighter Bomber (FB) (can be assigned to fly either fighter or bomber missions)

Night Fighter (NF)

Tactical Bomber (TacB)

Level Bomber (LB)

Transport (TR)

Recon (Rec)

Patrol (PA)

Torpedo Bomber (TB)

8.1.6. AIR GROUP UNIT NAMES

Though some of the air group unit names in the game are self-explanatory, many use terms and abbreviations that may not be familiar. The below lists are not comprehensive, but are provided to assist in recognizing the type of air group unit from the name.

8.1.6.1. GERMAN AIR GROUP UNIT NAMES

Stab - Command Flight

JG (Jagdgeschwader) - Fighter Wing

NJG (Nachtjagdgeschwader) – Night Fighter Wing
ZG (Zeröstrergeschwader) – Destroyer (Twin Engine Bf110) Wing
StG (Stukageschwader) – Stuka Wing
SG (Schlachtgeschwader) – Battle (Fighter Bomber) Wing
KG (Kampfgeschwader) – Bomber wing
SKG (Scnellkampfgeschwader) – Fast Bomber Wing
NAGr (Nahaufklärungsgruppe) – Short Range Reconnaissance Wing
FAGr (Fernaufklärungsgruppe) – Longe Range Reconnaissance Wing
NSGr (Nachtschlachtgruppe) – Night Bomber Wing
SG (Schlachtgruppe) – Fighter Bomber Wing
TG (Transportgeschwader) – Transport Wing
KGrzbV (Kampfgruppe zur besonderen Verwendung) – Battle Group Special Purposes or Operations
Lehr – School/Training

8.1.7. AIR GROUP UNIT LOADOUTS

Air Group Units have a default loadout determined by the type of aircraft and the assigned mission. The player has the option to change the loadout through the air group unit detail window (26.3.19), which also can be accessed through the Commander's Report air group unit tab (26.2.4), either individually or for multiple air group units with the same aircraft model. Use of manual air group selection allows multiple air group units of the same model assigned to the same type of air directive to change loadouts as well (5.3.4). The type of loadout can impact aircraft effectiveness by decreasing various attributes such as climb rate, speed, and manoeuvrability, though fighters and fighter bombers may drop bombs and/or fuel drop tanks when engaging in air to air combat (17.1.9).

8.1.8. AIR GROUP UNIT AIRCRAFT MODEL UPGRADE/DOWNGRADE AND SWAPS

Dependent on the availability of aircraft models in the production pool, air group units may be changed to a different model aircraft manually by the player or automatically during the player's logistics phase (4.2). Auto upgrades result in the loss of one experience point for each pilot in the air group unit, while manual upgrades result in the loss of three experience points for each pilot. An aircraft model has to be in production for at least 1 month (3 months for US aircraft) before it can be used to upgrade an air group unit. The default setting for air group unit upgrades is manual; however, air group units in the East Front box are set to auto upgrade at the start of each Axis logistics phase (23.1.3).

Players have the option to manually change (swap) the aircraft model through an air group unit's detail window (26.3.19), with possible aircraft models listed when the "CHANGE" link has been toggled from "Automatic" to "Manual" (default is manual) and models available for change out highlighted in blue and selectable. Changing the aircraft model in an air group unit may result in up to thirty percent of the new aircraft becoming damaged. Manual aircraft swaps are not allowed on turn one of any scenario. The air base unit to which the air group unit is attached must be located at least three hexes away from an in supply enemy unit. The chance of a change out increases as a group's total number of aircraft as a percentage of the maximum number of aircraft in the air group unit decreases. The air group unit cannot have flown any missions yet in the turn and will be unable to fly any missions after the change out.

Normally, an air group unit swap will involve the same aircraft functional type, but there are some exceptions and restrictions (for manual changes only) as follows:

Aircraft types are the same

Tactical Bombers can switch to Fighter Bombers

Fighter Bombers can switch to Tactical Bomber if the group is trained as bombers

Fighter Bombers can switch to Fighters if the group is trained as fighters

Fighters can switch to Fighter Bombers

ZG groups can switch to Night Fighters and Fighter Bombers

JG groups cannot switch to the Bf110

Groups with the Bf110 cannot switch to the Bf109

US air group units other than Fighters, Fighter Bombers, and Night Fighters cannot switch to an aircraft model that has a different number of engines.

If the player toggles the "CHANGE" link from "Manual" to "Automatic," then in the upgrade sub-segment of the logistics phase, the air group unit may upgrade in accordance with its current aircraft upgrade path as listed in that aircraft model's city production list window (26.3.4). It may also downgrade to older aircraft (21.1.10). In the swap sub-segment, the air group unit may change out the existing aircraft model with an aircraft model of the same functional type (8.1.4), but not necessarily along the upgrade/downgrade path. For example, a P-51B-10 Mustang is a fighter bomber aircraft that upgrades to the P-51D and downgrades to the P-51B-1 fighter bomber. In the swap sub-segment, however, an air group unit with P-51B-10 aircraft may be changed out to another fighter bomber functional type, such as a P-47D-15 Thunderbolt. The computer will only swap out aircraft in air group units that have less than 50 percent of maximum aircraft allowed, with the lower the percentage below 50, the higher the chance for an aircraft swap. Once again, these changes are dependent on the availability of numbers of different models of aircraft in the production pool.

There are a few instances where air group units will attempt automatic upgrades that do not follow the normal aircraft

upgrade path. These can occur only if an air group unit is set to Automatic upgrades. They are: 8th and 15th US Air Force P-47 (any model) fighter bombers that are set to Fighter mission will try to upgrade automatically to P-51D, P51B-10, P-38J/L or P-38G/H aircraft, in that order. All P-39 and P-40 air groups will try to upgrade automatically to P-47D-25 or P-47D-15 aircraft, in that order. An interface window to provide information when upgrading aircraft can be accessed from the air group unit detail window when the group is set for Manual Aircraft Change. Select 'Manual'. The window will display the possible aircraft alternatives and for each, the number of aircraft in the pool, the number of aircraft in air group units, and the number of factories. The player can use the selectable links to navigate back and forth between appropriate information windows. Selecting an aircraft model will also allow the player to compare it with the current aircraft model.

V1.00.00 – 21 November 2014

Some damaged planes, when swapped out, will be written off.

V1.00.07 – 19 December 2014

Restricted TacB <-> FB aircraft swap outs for the Axis player so these are not allowed. These swapouts are allowed for the Allies for FB units that are trained as bombers. If a TacB switches to FB, it will be trained as a bomber.

Automatic aircraft upgrade/swaps in an air group will not happen for the next two logistics phases after the unit has had a change in aircraft.

V1.00.13 – 26 January 2015

New Aircraft Upgrades – US 2-4 engine aircraft may not be used for upgrades 1 month after beginning production. US single engine aircraft are still not available until 3 months after beginning production.

V1.00.29 – 19 March 2015

Aircraft can now be manually changed on turn 1 of any scenario.

8.2. PILOTS AND AIRCREW

Aircraft in an air group unit must have a pilot and associated crew if required to be in a ready status and fly in air mission. Pilots and any associated air crew are assigned to air group units up to the maximum size of the type of air group unit. For example, an USAAF level bomber air group unit with a maximum group size of 72 could have up to 72 pilots with associated air crew. Pilots will remain assigned to an air group unit unless they are either killed in action or the air group unit is disbanded. Wounded pilots will remain with their assigned air group unit and will eventually be healed and return to flying duties. The air group unit detail window (26.3.19) has a pilot tab for air group units that lists each pilot by pilot number, and shows the pilots experience, fatigue, air kills, missions flown and health status. Pilots gain and lose fatigue, and experience based on the air missions flown by their aircraft and the experience and fatigue of their assigned air group unit is determined by the average of assigned pilot experience and fatigue (9.0). Pilot experience is also tracked by aircraft type at the air HQ unit level where the average experience is displayed in the Air Doctrine Screen pilots tab (5.3.2). The player can also set the experience level below which pilots will conduct training missions while the rest of the air group unit is actively flying combat air missions.

When pilots are initially assigned to an air group unit, they are either trained pilots with experience equal to current air national morale or new pilots with experience equal to only half the current air national morale (9.1). The exception is air group units that arrive as reinforcements in the national reserve, whose pilots will have an experience rating based on the average of the air group units' set experience rating (19.1.1). Each nation will receive a certain number of replacement trained pilots each turn and any additional pilot vacancies may be filled by new pilots. The player can set the pilot and aircraft replacement priority in the air group unit detail window, to include assigning only trained pilots (20.5.5). Pilots can be also be manually added to an air group unit in the unit detail window, both individually and multiple pilots up to the maximum ready value.

The Commander's Report air group unit tab has a pilot's section that displays both the total number of pilots and their status and the pilot pool, which displays the number of available trained pilots (26.2.4). The pilot pool and the manpower pool are separate, but even if trained pilots are listed in the pilot pool, they will not be available unless there is sufficient manpower in the manpower pool for the pilot and any required air crew. For example, to assign an available trained pilot to a B-17G air group unit, ten manpower would need to be available for both the pilot and the associated air crew.

V1.00.21 – 18 February 2015

Added new generic data - pilot names. Newly generated pilots will be given random names. The existing scenarios have not been fully updated with this feature so starting groups will still have pilot numbers.

V1.01.01 – 30 September 2015

Changes made to the air game rules that are documented in the OnePageGuide 4b: Historical pilots are designated on the air group detail screen (pilot tab).

8.2.1. PILOT TRAINING

Pilots can fly training missions to improve their experience ratings. Training missions can result in an increase in pilot experience and a possible increase in the air group unit morale rating. If pilot experience is higher than that nation's current air national morale, the chances to get experience increased through training are much lower. In addition, pilots with experience ratings over 50 will have less chance to gain experience through training than pilots with experience less than 50. Note that Air group units in the national reserve do not fly training missions.

Training missions are flown during the maintenance segments of the phasing player's air execution phase. Pilots will fly training missions under the following conditions:

Air group unit mission set to training.

Pilots in air group units with mission not set to rest or training if that pilot's experience rating is below air doctrine training experience setting (5.3.2)

Pilot fatigue below 20

Air base unit has enough fuel and ammunition

Air base unit damage is below 20

V1.00.07 – 19 December 2014

Decreased pilot training losses.

V1.00.21 – 18 February 2015

Increased amount of Canadian pilots trained each turn (aprox x3).

V1.01.01 – 30 September 2015

During maintenance phase pilot accumulated fatigue is not reduced to zero, but divided by 4, unless group is set to rest or is idle.

V1.01.12 – 6 November 2015

Increased probability of low exp pilots (≤ 50) to gain experience when flying training flights.

8.2.2. PILOT SPECIALIZATION

Pilots are internally rated with a specialization flag so they can only fly certain types of aircraft. The types are Fighter, to include Fighter Bombers trained as Fighters, Fighter Bomber, Tactical Bomber, Level Bomber, Recon, Transport and Naval Patrol (Naval Only) (26.2.4.2). Since trained or untrained replacement pilots are not flagged with a specialization until they are assigned to an air group unit, pilot specialization only matters when an existing air group unit is disbanded and the associated pilots are returned to the pilot pool. At that time, they can only be assigned out to an air group unit that meets their specialization criteria. For example, if the Axis player disbands a number of level bomber air group units, the pilots from those air group units will not be available to fill vacancies in fighter air group units.

8.3. AIR BASE UNITS

Air base units, also referred to as airfields are special headquarters units (7.6.1) that represent the physical and logistical infrastructure required to support air group units, to include airfields, repair facilities and anti-aircraft defenses. Air base units consist of only two types of ground elements, support and air support squad ground elements and anti-aircraft ground elements.

Air base units are fixed facilities displayed on the map area with a symbol denoting their size (6.2.2), which from smallest to largest is 1, 2, or 3. There are multiple ways to access the air base unit detail window (26.3.18). If there is no ground unit in the hex, it can be accessed directly by double left clicking on the hex. Alternatively, the air base unit detail window can be accessed through the general information and city/airfield box (5.1.5) by either selecting the airfield symbol next to the name of the city or by selecting the city name and then selecting the air base unit name located under the units attached section of the city detail window (26.3.28). Air base unit symbols are color coded based on TOE settings (8.3.1) and will have an exclamation point added if overloaded in ability to support (8.3.5). When in air mode (F10), the number of air group units on each airfield is displayed on the map area.

Though air base units are listed in the city detail window as attached to that city, for command and control purposes air base units are attached to an air HQ unit. However, any friendly air group unit may be assigned to any air base unit regardless of the air HQ unit the air group unit is attached. Note that players cannot manually change the HQ unit of air group units set to always fly Naval Patrol.

Air Base units can be captured and converted to the phasing player's control (6.3.5). The presence of an air base unit in a hex will prevent change of control due to Italian Surrender or France Partisan Uprising. In addition to normal supply and replacement during the logistics phase, air base units can be resupplied with fuel and ammunition during the air execution phase (20.4.3).

V1.00.29 – 19 March 2015

When Italy surrenders and Italian airbases are changed to German nationality, their supply priorities were set to 0 and their Max TOE were set to 1. Now, they retain the setting they previously had.

V1.00.37 – 7 May 2015

New Rule - Flights flying from size 1 airfields in poor and average road system hexes with light mud and heavy mud can get cancelled. When planes fly from these bases they have higher chances for operational damage.

Formula Adjustment - Enhanced air base replacement code so it would replace evenly based on supply priority.

8.3.1. AIR BASE UNIT TOE

Airbases have as part of their TOE 250 Air Support elements which service the aircraft. Since air base units are fixed installations that can hold a variable number of air group units, air base units TOE can be set to allow the player to manually or automatically manage air support elements. In addition, the TOE can be set to essentially put the air base unit into lay up if it is not currently assigned any air group units. If the Max TOE is set to a number between 1 and 100, then the airbase will treat air support just like it treats other ground elements in terms of getting replacements and will not send air support elements back to the pool (it will try to maintain air support at least at the level that is set for Max TOE). If set to Auto, (the default for any new or captured airbase or set by entering - 1 for the Max TOE), the airbase will automatically move manpower back and forth from the pool (if not isolated and if freight is available) in order to have the air support that the base requires, no matter how large or small the actual need. In this case, if the desired air support is less than 100 percent of TOE, the air base unit will try to adjust its other ground elements as well to match, but never to exceed 100 percent of TOE. For example, if air support need is 60 percent of TOE, then the other elements will also try to have 60 percent of TOE, if air support need is 160 percent, then the other elements will try to have 100 percent of TOE). Airbase units that are set to a Max TOE of 1 will immediately send all elements back to the pool as long as they are not in an isolated supply state. When an airbase is set to Auto TOE, one third of the unneeded AA and regular support ground elements will be returned to the pool each turn. Units with their Max TOE set below 50 will gain no morale increase in the logistics phase. Air Base unit symbols are color coded on the map area with green for air base units containing aircraft and with Max TOE set either above 1 or on AUTO, orange for air base units containing aircraft and with Max TOE set to 1, and red for air base units containing no aircraft.

Air base units created along with a temporary port after a successful amphibious invasion automatically try to fill up the air base unit to 100 percent of TOE at the moment it is created. This uses freight that is offloaded at the temporary port from cargo ships attached to the amphibious HQ unit conducting the invasion.

PLAY NOTE

If you are intending to move an air group to a new base it helps to bump the TOE percentage from Auto to a number of substance (something like 55%) a turn or two before then set it to auto once the air group arrives. Otherwise it takes a while to build up air support.

V1.00.37 – 7 May 2015

Formula Adjustment - Adjusted air base supply requirements - should check pilot crews available instead of aircraft.

8.3.2. BUILDING AND EXPANDING AIR BASE UNITS

The building or expansion of an air base unit can be started by the player in either the air planning or action (move) phase. Players can only build new air base units in town, city, and urban hexes. Building or expanding an air base unit requires the expenditure of one administration point (AP). To build or expand, the player selects the city name in the general information and city/airfield box and then selects either 'BUILD AIR BASE' or 'EXPAND AIR BASE' as applicable in the city detail window (26.3.18). . The speed of construction is based on the terrain of the hex and availability of construction and labor support units. The percentage progress of the construction is shown in the city display window.

The number of turns required to build or expand an airbase unit is based on the number of engineers and labor squads in the construction unit assigned to the construction project. Progress will be slower in worse terrain and bad weather. The amount of expansion done in the turn is divided by the ground weather value: divided by 2 if light mud, by 3 if heavy mud, by 4 if light snow, by 5 if snow, by 6 if heavy snow. The amount is also divided by the terrain in the hex as follows: rough/lt woods/urban/bocage /2, swamp/hvy woods/hvy urban/tundra/sand /3, mountain /4.

If an air base unit is bombed while being expanded, all damage must be repaired before expansion work can continue.

As a result of a successful amphibious landing, a size two air base unit with 50 percent damage will be automatically created in

the target hex if it is clear or bocage terrain.

V1.01.01 – 30 September 2015

Changes made to the air game rules that are documented in the OnePageGuide 4b:
Added new airfield fog of war info functionality. 8.3.2

v1.01.20 – 1 February 2016

Adjusted air base repair/expansion code, so it will allow some reduced repairs/expansion, even if there is not 100% of required supplies. Reduced air base expansion rate from size 2 to 3.

8.3.3. AIR BASE UNIT DAMAGE AND REPAIR

When an air base unit is the target of a ground attack or strategic bombing air mission, it can take damage to the airfield, the air base unit's ground elements, the supplies at the airfield, and the aircraft at the airfield. Damage to the airfield may impact the ability of aircraft at that airfield to carry out air missions. The more damage to an air base unit, the more operational losses will be suffered by air group units attached there and the fewer sorties that can be flown from the air base unit. The larger the size, the harder it is to damage the airfield and to destroy or damage aircraft and supplies at the airfield. However, while it is harder to damage a larger base, it is also harder to repair the larger air base unit once it is damaged. In addition, the more aircraft located at the air base unit, the more likely those aircraft are to be damaged or destroyed during an attack.

Air base unit repair is automatically performed on the air base unit by the attached air support units each day during both players air execution phase and after enemy air missions have been flown for the day in the enemy air execution phase. Normal airfield repair is 10 percent per day. In addition to the automatic repair that happens each day during the air execution phase, air base units that have construction units there to expand their size will use those units to repair damage during the logistics phase. In the combat resolution report (26.3.12), the percent damage done to an airfield during a bombing attack is show as two numbers, before the bombing and then the amount of damage done by the bombing. For example, 9+35 would mean damage started at 9 percent and then 35 percent more damage was caused by the bombing. After the bombing, some damage will be repaired, so in this case the damage would go up to 44 percent and then would be repaired down before the next day's air missions began. The current damage percentage of an air base unit is displayed in the hex pop-up text (5.2.1).

V1.00.37 – 7 May 2015

New Rule - Added extra damage effect to overloaded air fields that are bombed which increases with size of aircraft (engine number).

Formula Adjustment - Reduced damage done to aircraft on airfields (also increased importance of recon).

8.3.4. AIR BASE UNIT ATTACHMENT RESTRICTIONS

The only units that can be attached to air base units are air group units. Note there is no limit to the number of air group units that can be assigned to a country's national air reserve (8.4). Air base units can only attach to air headquarters units. There is no limit to the number of airbase units that can be attached to an eligible air headquarters unit. Note that no airbase units will change their air HQ automatically unless the AI move/manage airbases/units (shift A) button is used (5.3.13).

8.3.4.1 AIR BASE UNIT NATIONALITY SWITCH

If an in-supply air base unit contains no air groups, and the TOE of the air base unit is set to Auto, then in the logistics phase the air base unit will change to match the nationality of the air HQ unit that the air base unit is attached. When a friendly air base unit changes its nationality it will retain the Max TOE setting that the air base had before the nationality change. Bulgarian, Hungarian, and Rumanian air base units will not change nationality.

V1.00.11 – 14 January 2015

Air Base Nationality Switch - When airbases switch nationality they will now retain the air base's supply priority.

8.3.5. AIR BASE UNIT CAPACITY AND SUPPORT

A maximum of 20 air group units can be assigned to an air base unit. The number of individual aircraft an air base unit can effectively support is dependent on the air base unit size and type of aircraft. Each aircraft, regardless of its state (ready, damaged, reserve) has a support requirement that is represented by maintenance points determined by the number of engines on the aircraft and the air base unit size as follows:

	MAINTENANCE POINTS		
Number of Engines	Level 1 ABU	Level 2 ABU	Level 3 ABU

1	1	1	1
2	2	1	1
3	3	1	1
4	4	2	1

Air base units can effectively support a certain number of maintenance points worth of aircraft dependent on their size as follows:

Size 1: 90

Size 2: 180

Size 3: 270

If the air base unit load percentage exceeds 100 percent, the amount of aviation support available is reduced such that air support will be equal to air support * 100/load percentage.

For example, a size 1 air base unit could effectively support up to 90 single engine aircraft, but only 22 four engine aircraft. A four engine bomber group of 48 aircraft assigned to a size 1 air base unit would generate 192 maintenance points, reducing the effectiveness of aviation support by about 50 percent.

In addition, air group units assigned to an air base unit that are not attached to the same air HQ unit will suffer approximately a twenty percent penalty in aircraft maintenance.

Air base load (capacity) percentage is shown in parentheses on the hex pop-up text for the air base unit after air base unit size. When the air base unit load percentage is over 100, an exclamation point will be added next to the airfield symbol.

8.4. AIR HEADQUARTERS UNITS

Air headquarters units fulfil the same function as other headquarters units with the exception that they cannot attach any combat units and the only support units that can be attached to air headquarters units are anti-aircraft support units. Type 1 (High command) and 2 (Regional command) Air headquarters units provide command and control of other air headquarters, but do not have air group units assigned and subsequently cannot be issued air directives. Type 3 (Air Force, Type Command, Luftflotte) and Type 4 (Jagdkorp) can be assigned air group units and be issued air directives. Each air HQ unit can be assigned air directives equal to the leader's air+admin ratings divided by two and rounded down, with a minimum value of 4.

Air HQ units will share their support for ground elements at attached air base units (7.7.4).

The Strategic Air Force HQ unit will be automatically renamed the 15th US Air Force on the first turn of November 1943 in all scenarios.

8.4.1. AIR HEADQUARTER AND NAVAL PATROL GROUP ATTACHMENT RESTRICTIONS

Air base units can only be attached to air headquarters units (8.2.1), however, there is no limit to the number of air base units that can be attached to a single air headquarters unit. German corps air headquarters units can only attach to German Luftflotte, Army Group, OB West or OKL headquarters. German Luftflotte air HQ units can only attach to Army Group, OB West or OKL headquarters units. Axis Allied air HQ units can only attach to Army Group headquarters units of the same nationality. Air group units with the permanent Naval Patrol only air group units cannot change their air HQ unit attachment.

8.5. NATIONAL AIR RESERVE AND AIR GROUP UNIT TRANSFER

Each side's national air reserve simulates the network of training and repair facilities well behind the lines that prepare new air group units and serves as the arrival point for air group units entering the game as reinforcements. The air unit tab of the Commander's Report (26.2.4) lists the location of all of a particular side's air group units, to include those in the national air reserve.

8.5.1. TRANSFER OF AIR GROUP UNITS FROM THE NATIONAL AIR RESERVE

The transfer of air group units to air base units from the national air reserve can be conducted manually by the player by selecting the 'ASSIGN' button in an air base unit detail window (26.3.18). Air groups transferred from the national reserve to an air base unit will be unavailable to conduct any missions during the turn they are transferred. Note that air group units on the map area can't be moved to the National Reserve. Only newly arriving air group units (reinforcements for all and units coming from the East Front box (23.0) for the Axis) are placed in the reserve.

9. MORALE, ELITE UNITS, EXPERIENCE, FATIGUE, ATTRITION, AND RELIABILITY

There are many interrelationships between morale, experience, fatigue and attrition. Morale figures into most of these and is the single most important unit attribute. Morale determines experience level and fatigue gain. Attrition is based on morale and experience. Combat Value (CV) is affected by morale and fatigue. Movement allowance is impacted by morale, fatigue and experience. In all cases, high morale and experience is good, while high fatigue is bad. Attrition from being adjacent to enemy units is less for higher experienced units. Fatigue itself can damage units and can destroy already damaged units. This fatigue impact is much worse when units are adjacent to enemy units, which means that when adjacent to enemy units, not only do they take attrition losses, they also recover less fatigue and will suffer more losses due to fatigue. Units with high experience levels will be less affected by fatigue.

9.1. UNIT MORALE

Morale is a critical factor for all units in Gary Grigsby's War in the West. Morale is figured at the unit level and the higher the morale the better the unit will perform and the less it will suffer adverse effects. Each nationality in the game has a basic level of national morale. The actual unit morale can be above or below the national morale, but unit morale will tend to gravitate towards the national morale. Elite units have their morale set at a higher level.

The morale of a unit impacts its combat value and thus its ability to win in combat. It also determines the amount of retreat attrition taken by its ground elements if the unit is forced to retreat as well as whether the unit will rout, shatter or surrender as a result of being forced to retreat (15.10). The morale of a routed unit will be a determinant in its ability to rally.

Unit morale is used to determine the movement cost to enter enemy controlled hexes and hexes under the influence of enemy zones of control (EZOC). For air group units, the morale of a unit impacts the number of miles it can fly in a turn (16.1.1) and the experience rating of trained and new pilots is based on national morale.

Morale is also important in that it limits the ability of a unit's ground elements to train to a higher experience level, as they can only train up to the morale level of their parent unit. In the same way, an air group unit can only train up its experience to match its morale level.

The Morale leader rating is used for determining unit combat value in battle, determining won/loss credit, adding or recovering fatigue in the unit's ground elements, and rallying routed units.

If the Eastern Front option is enabled, the transfer of units to and from the East Front can result in gains or losses respectively to the morale of units in the East Front box (23.1.4).

9.1.1. GROUND UNIT MORALE CHANGES

The morale of a unit may increase when it is successful in combat (holds on defense or retreats the defender when attacking). Units with morale over their national morale can gain morale after successful combat, especially if the unit is less than 10 points over their national morale and not over 90 morale. Units do not gain morale while routed. Units may only gain morale outside of combat if their morale is less than 10 points above their national morale, or less than 50, whichever is greater. Units with their Max TOE set below 50 will not receive a morale increase in the logistics phase (this includes rebuilt units with Max TOE set to 0).

The morale of a unit may increase during the friendly logistics phase due to any and all of the following circumstances:

The unit's morale is below its national morale, or 50 (whichever is lowest), and it is in refit mode and it is more than 10 hexes away from the nearest enemy unit. May gain 0-2 morale points.

The unit's morale is below its national morale, or 50 (whichever is lowest), and it is more than 10 hexes away from the nearest enemy unit. May gain 0-2 morale points.

The unit's morale is below its national morale. In this case it can recover as much as 10 percent of the national morale but not more than the country's national morale (Example: German national morale is 60 in 1944 so a unit could recover 6 per turn, not to exceed 60 for a non-elite unit).

The unit is in a very good supply and support situation and its morale is less than 75. If Die (75) is greater than the unit's morale than a gain for this situation is possible.

Units that are below 40 morale automatically gain one morale point in the logistics phase.

Ground unit morale may decrease due to losing battles, suffering from air interdiction, or being in an isolated state. The higher a unit's morale is over its national morale, the greater the chance the morale will be reduced when it loses a battle.

Retreated units may lose one morale point, which will be increased to a loss of two morale points if the leader Morale check fails.

Routed units lose one additional morale point.

Isolated units may lose one or more morale depending on existing supply shortages.

Units which miss morale and fatigue rolls can lose morale during logistic phase.

If at the end of the logistics phase a unit has less than 20 percent of needed supplies, it has a chance of losing 1 morale point. If the value is less than 10 percent there is a chance of losing 2 morale points.

Each logistics phase there is chance that a unit can lose a morale point due to fatigue. The higher the fatigue and the lower the morale of the unit, the greater the chance that the unit must make a leader morale check to avoid a morale loss.

Each turn there is a chance that a unit's morale will be lowered by 1 or 2 points if its morale exceeds its national morale by 30 points or more.

9.1.2. AIR GROUP UNIT MORALE CHANGES

Air group unit morale may increase due to destruction of enemy aircraft in air to air combat as well as when the air group unit

receives supplies. Air group unit morale will decrease due to aircraft being damaged or destroyed in combat.

In the air execution phase, air group units can recover morale during each air maintenance segment if they did not fly a mission during that day. Air Group units set to the rest mission will recover morale at double the normal rate.

9.1.3. BASIC LEVELS OF NATIONAL MORALE

The below table summarizes the basic ground and air unit national morale level for the major nations in Gary Grigsby's War in the West. Data for all nations can be found in the NATION MORALE of the Nat/Weather tab of the War in the West Editor. Note that national morale can also be modified by the difficulty level Morale Level Modifier in the game option screen (3.3.3).

Nation/Unit Type	YEAR/QUARTER				
	1943/ Q3-4	1944/ Q1-2	1944/ Q3-4	1945/ Q1-2	1945/ Q3
German/Ground	70	65	60	55	50
German/Air	75	70	65	60	55
Axis Italy/Ground	30	40	40	40	35
Axis Italy/Air	35	45	45	40	35
USA/Ground	55	60	60	65	65
USA/Air	75	80	80	80	80
Britain/Ground	65	65	65	65	65
Britain/Air	80	80	80	80	80
Free French/Ground	60	60	55	60	60
Free French/Air	80	80	80	80	80

9.1.4. MORALE OF NEW UNITS

Newly created units have their initial morale based on the current basic national morale level in all cases (9.1.3).

9.2. ELITE UNITS

Elite units receive a bonus over the current national morale. All elite units are pre-designated, which is reflected in the Commanders Report for those units by the letter E in the E/G column (26.2.2).

9.2.1. MODIFIERS FOR ELITE AND SPECIAL UNIT TYPES

All Elite units receive a fifteen point bonus to their national morale. In addition to any elite bonus, some units receive additional bonuses to their National Morale based on unit type. All Cavalry, Mountain, Airborne and Air Landing units, Allied Motorized units and Axis Allied Motorized units receive a five point bonus. German (permanently) Motorized Units receive a ten point bonus. HQ units and non-motorized units that are temporarily motorized (14.1.3) do not receive the motorized bonus to national morale.

9.3. EXPERIENCE

9.3.1. GROUND ELEMENT EXPERIENCE

Experience represents both how well a ground element is trained and its ability to maintain unit cohesion in combat situations. In a unit each type of ground element (i.e. infantry squad, 50mm Mortar, Panzer IIc) has an experience level that is an average of the individual experience of all the same type of ground elements. As with morale, the higher the ground element experience level, the better. Experience mainly impacts combat, affecting combat value, the amount of retreat attrition, and the probability of firing and hitting enemy ground elements.

Ground elements increase their experience level automatically during the supply and replacement part of the logistics phase through training. Though this is the only time ground elements gain experience, the amount of combat the ground element participated in during the previous turn positively affects the ability of the ground element to increase the number of experience points gained. Ground elements can train up to the morale level of their parent unit (9.1). Ground elements that have an experience level lower than their unit's morale will increase their experience at least one point per turn, but have a chance to gain up to a total of five experience points. The normal experience gain is two to three points per turn. If an element's experience is less than half of the unit's morale, then the one point gain in experience each turn becomes a three point gain. Ground elements in units in good supply, especially if they are located at a depot (20.1.1) will be able to gain more experience during training, as will ground elements that participated in combat the previous turn. Ground elements with an experience level equal to their unit's morale will not be eligible to increase their experience until their unit's morale increases. Ground elements will not lose experience just because their unit's morale dropped below their current experience level.

Replacement ground elements coming into units will tend to bring down average experience, but not by a significant amount. Newly created units will appear on the map with a low experience level to represent the need for many turns of initial training and the buildup of unit cohesion. The experience for ground elements newly introduced to a unit due to a TOE change will be based on the average of similar ground class elements in the unit. If no such elements exist, the national morale will be used to build the new elements.

9.3.2. AIR GROUP UNIT EXPERIENCE

Air group unit experience has a significant impact on combat effectiveness during air missions. Air group units gain experience based on the number of missions they fly. Air group units or individual pilots can fly training missions each day during their player air execution phase in order to gain additional experience (8.2.1). These training missions will increase the chance of operational losses, resulting in additional damaged or destroyed aircraft from the air group units conducting the training.

Air group units will decrease in experience due to the addition of replacement aircraft pilots. In addition, pilots in air group units that automatically upgrade (swap) (change out) their aircraft model, will lose one from their current experience rating while pilots in air group units that manually upgrade will lose three from their current experience rating.

V1.00.00 – 21 November 2014

Only a/c changes (upgrades/swaps) to a/c of a different type or a different number of engines will cause a reduction in pilot experience (-2 in each case, max of -4).

9.4. FATIGUE

9.4.1. GROUND ELEMENT FATIGUE

Fatigue impacts the Combat Value (CV) of a ground element and this is reflected in the CV value shown for a unit in the game. The CV of a ground element is reduced by 1/3 of the fatigue level. Thus, an element that has a fatigue of 60 will have its basic CV value reduced by 20 percent when calculating the CV of the unit. Fatigue also impacts movement point allowance (14.1.2).

During the Logistics phase, ground elements in units gain additional fatigue based on the unit's morale. Following this the ground elements may take damage based on the fatigue of the ground element. Successful leader morale rating checks assist in this process by helping units recover morale faster when fatigued. Units adjacent to an enemy unit during their logistics phase gain 4 times as much fatigue and there is 16 times more probability that damaged ground elements will be destroyed during this phase compared to units not adjacent to an enemy unit. This represents the additional stress and strain of being in the front line.

During the Logistics Phase, ground elements in units reduce their fatigue based on their supply situation and available support (number of support squads available versus the unit's need). Next, damaged elements attempt to repair themselves, and the repair chance is impacted by the unit's supply and support, and by the element's experience. The number of support squad ground elements in a unit (and in HQ units in the unit's chain of command) will influence fatigue recovery (7.7.4).

Disruption from combat is converted into fatigue before any new combat, and is also converted at the very start of the logistics phase, so units will always begin a turn with zero disruption.

9.4.2. AIR GROUP UNIT FATIGUE

Air group unit fatigue impacts combat effectiveness, the number of aircraft operational losses and the number of aircraft from that air group unit that will conduct a particular air mission. Air group units gain fatigue as a result of air combat and the amount gained is dependent on the number of air attacks made and the total distance flown. Air group units can recover from fatigue during the supply segment of the logistics phase. As with ground elements, the amount of fatigue reduction will be determined by the supply situation and available air support squad ground elements at the air base unit the air group unit is attached.

V1.01.12 – 6 November 2015

Added extra pilot fatigue when flying over 25K.

9.4.2.1. FATIGUE AND AIRCRAFT DAMAGE

Fatigue can result in increased aircraft losses of all types. Aircraft with pilots with high fatigue that take damage during a mission may gain additional damage during landing to the point where the plane crashes and is lost. If there was a sufficient amount of damage the lost aircraft will be listed as a loss from the initial damage. For example, an aircraft that took anti-aircraft damage and then crashes on landing due to additional damage caused by high fatigue would be listed as lost to flak.

9.5. ATTRITION

Attrition represents the effect of wear and tear on units, both non-combatant equipment and manpower losses as well as the constant losses suffered by front line units due to low intensity combat operations. Normal attrition occurs during the phasing players logistics phase. In addition, units can suffer retreat attrition as a result of losing a battle (15.12). For manpower losses due to attrition, approximately thirty percent will be killed and seventy percent disabled. See the applicable sections for attrition type

losses associated with airborne unit landing (15.7) and naval and amphibious operations (16).

9.5.1. GROUND ELEMENT ATTRITION

In the attrition segment of the logistics phase ready ground elements may be damaged. This is followed by the reduction of fatigue and the repair of ground elements, when damaged ground elements may be repaired, destroyed or cannibalized, which means that two damaged ground elements become one ready element and one destroyed element. One half of the damaged ground elements are sent back to the production pool if the unit they are part of is in supply (20.5). Damaged ground elements have a chance of repairing that is affected by their supply status and the number of support squad ground elements in the unit (7.2.2). Note that if units are advancing at the limit of their supply and/or beyond their support network (7.7.4), their ground elements can be worn down from movement alone, without consideration of combat losses. Note that as units run low on supplies they use fewer supplies. This causes a greater chance for elements to become damaged and destroyed during the logistics phase.

9.5.2. FRONT LINE ATTRITION

Units that begin their turn adjacent to enemy units during their logistics phase will suffer additional attrition losses representing low intensity combat, with approximately one quarter to seven tenths of one percent of ground elements in a unit being destroyed (Thirty percent of the manpower is killed and the rest are disabled). Combat attrition losses are dependent on unit morale, the number of ground elements of a certain type in a unit, and the experience level of each type of ground element. The higher unit morale and ground element experience level, the fewer combat attrition losses. Isolated units and units low on supplies will suffer greater front line attrition losses. This attrition is in addition to the additional fatigue effects from being adjacent to enemy units (9.4.1).

9.5.3. VEHICLE MOVEMENT ATTRITION

A certain percentage of a unit's organic vehicles will be destroyed and damaged during its side's logistics phase based on the number of movement points the unit expended during the previous turn. If a unit expended 100 percent of its allowed (not base) movement points, 2 percent of the unit's vehicles will be destroyed, and 18 percent will be damaged. Reduced expenditure will result in proportionally reduced destruction and damage. For example, if a unit only expended thirty percent of its MPs, .6 percent of its vehicles would be destroyed and 5.4 percent would be damaged. Movement attrition for a support unit's organic vehicles will be based on the movement point expenditure of the unit to which it is attached.

V1.00.37 – 7 May 2015

Formula Adjustment - Reduced AFV attrition to units making very long distance moves.

9.5.4. AIR UNIT ATTRITION

Air groups will have aircraft become damaged if the air base unit they are attached to has insufficient supply and/or air support squad ground elements. The airbase unit ground elements will suffer normal attrition and fatigue losses.

GAME PLAY TIP

Be careful about letting your unit's fatigue get too high, especially for units adjacent to the enemy. Rotate highly fatigued units to the rear if possible. Units with experience that is far below the unit's morale can benefit from being in the rear far away from enemy units. Put them in refit mode on a depot and they should rapidly gain experience up to their morale level.

9.6. AIRCRAFT AND AFV/COMBAT VEHICLE RELIABILITY

All aircraft and AFV/Combat vehicles have a reliability rating which ranges from "really good" (lower numbers) to "really bad" (higher numbers). An example of a 5 would be an armoured car and a 45 would be a Panther D AFV. These reliability ratings are checked when aircraft conduct a mission or AFV/Combat vehicles are moved, with those that fail the reliability check becoming damaged. To reflect initial production "teething" problems, aircraft and AFV/Combat vehicle reliability will be increased by five when they first come into production and then decrease by one each month until they reach their standard reliability rating. The reliability rating of obsolete (out of production) aircraft is treated as higher than their normal reliability rating, which will make them more susceptible to attrition.

V1.00.07 – 19 December 2014

Rule correction – Aircraft reliability works as described in the manual, but AFV reliability works differently. The reliability rating of an AFV is actually two different items. The first digit represents the reliability of the AFV when moving (if only 1 digit is shown the 1st digit is assumed to be 0). The higher the number, the less likely the AFV will become damaged during

movement. The second digit is survivability, and the higher the survivability the less likely the AFV will be destroyed in combat during a special survival check as opposed to just being damaged.

9.6.1. AFV RELIABILITY BASED DAMAGE

Reliability is a factor in several instances where AFV ground elements may become damaged due to breakdowns. This results in a small chance that an attacking or defending AFV will breakdown in combat and become damaged.

10. FROZEN, STATIC AND DISBANDING UNITS

10.1. FROZEN UNITS

Some units begin a scenario frozen in place with zero movement points for a set number of turns. The number of turns is shown in the hex pop-up text but only for the player that owns the unit (Fzn 2 indicates frozen for two more turns). Other units may be frozen by scenario specific rules. These units do not show the number of turns remaining in the hex pop-up text and unfreeze under special conditions as listed in the scenario rules. During each friendly logistics phase, the unit's frozen turn counter is reduced by one, and when it reaches 0, the unit is no longer frozen and it will be given MPs for that turn. A unit frozen in this way may also be unfrozen if it is attacked, or if it is within 3 hexes of an unfrozen non-isolated enemy unit either during the logistics phase or after the amphibious phase.

10.1.1. FROZEN UNIT RESTRICTIONS

Frozen units are unable to move using either tactical or strategic movement. Frozen units cannot build forts, although construction units may build forts in hexes they occupy. Frozen units cannot disband, merge or build-up with other units or breakdown into smaller units. Frozen units can change their maximum TOE setting. Air group units attached to frozen air base units may conduct automated intercept missions.

10.2. STATIC COMBAT UNITS

Throughout the war, the German army stripped many units in quiet fronts of their vehicles and had them dig in and reduce their fuel consumption in order to focus resources in areas where offensives were planned. To simulate this practice, the player has the ability to place combat units in static mode during the game, turning in their organic vehicles for use by other units or the supply motor pool. Static mode takes vehicles out of a unit and reduces the unit to two movement points. Motorized units that are in static mode pay non-motorized movement costs when they move. The at-start forces in some scenarios may have units already in static mode.

10.2.1. SETTING COMBAT UNITS TO STATIC MODE

Any non-isolated, non-frozen combat unit on the map may be placed in static mode if that unit has not moved during the turn and is currently located in a hex with a manmade fortification level of two or greater (computer players are not held to the fort level requirement). Combat units are placed in static mode by selecting the hex they are in and then selecting the "STATIC" button on the desired counter in the unit bar. Note that the "STATIC" button will not be displayed if the combat unit is not eligible to be placed in static mode. The unit will immediately be reduced to two MPs for that turn and all of that unit's vehicles will be immediately returned to the motor pool (keep in mind that there are many vehicles in HQ units and in the supply system that are still being used by the unit, but it is assumed that the unit has given up all of its organic vehicles). The phasing player will immediately receive an admin point bonus based on the number of organic vehicles returned to the motor pool that is equal to $1 + ((\text{trucks in unit} + \text{Random}(100))/100)$ (truncated). When showing how many points will be gained, the displayed amount is $1 + (\text{trucks in unit}/100)$ (i.e. the lowest possible gain). The number of vehicles and the admin point gain will be shown to the player prior to confirmation of static mode. Static units have only two Movement Point per turn until they are reactivated, but may use strategic rail, naval or amphibious transport. Static units can build up (recombine) as long as all units doing the buildup are static. Static units can breakdown while static. Static units cannot merge or combine with non-static units. Static units cannot disband (18.5). Units in static mode will appear bordered in white when the Map Information tab View Unit Modes button (Shift-r hotkey) has been toggled on (5.1.2.1). Static units that retreat or rout as a result of combat remain in static status.

Italian units may not be converted to Static mode. Those that begin a scenario already Static may remain Static, but once mobilized, may not be put back into Static mode.

10.2.2. REACTIVATING STATIC COMBAT UNITS

Non-isolated static units that have not moved yet may be reactivated at any time during the movement phase by spending admin points. To mobilize a STATIC unit, vehicles are taken from the motor pool if there is sufficient freight in nearby depots to convert to vehicles, (but there have to be sufficient vehicles in the pool or the static unit cannot be reactivated).

Combat units are reactivated by selecting the hex they are in and then selecting the “REACTIVATE” button on the desired counter in the unit bar. Static units may not be reactivated the same turn they are made static. Combat units may not attack on the turn that they are reactivated from static mode.

Activated units will immediately receive 50 percent of their vehicle requirement from the pool and 50 percent of their maximum movement points (25 for motorized, 11 for cavalry and 8 for infantry types). The admin cost for activations is equal to $1 + ((\text{truck need of unit when mobilized} + \text{Random}(50))/50)$. When showing how many points it will cost, the display shows the AP gain as $1 + (\text{truck need of unit when mobilized} + 50)/50$. This is (the most that could be charged, it could be one less than this).

For example, a static 17th Panzer Division that requires 1318 vehicles could cost up to 27 admin points to reactivate ($1318 + 50/50 = 27.36$, rounding down to 27).

10.3. DISBANDING UNITS

Most ground and air group units may be permanently disbanded and removed from the game. The exceptions are high command (type 1) headquarters units, all types of air headquarters units, and units of any type that are scheduled to be withdrawn. To disband a unit, select DISBAND from the unit detail window. This will send the aircraft and pilots and aircrew manpower from air group units or the manpower and equipment from all of the ground elements in ground units back to their respective production pools. Any support units that are assigned to a unit that is disbanded are automatically reassigned to the next higher HQ unit of the disbanded unit.

10.3.1. DISBAND REQUIREMENTS AND RESTRICTIONS

Units can only disband if they have enough movement points remaining to move to a rail hex that is connected to the supply grid, and if they are not within three hexes of an enemy unit. Frozen or static units cannot be disbanded. A unit is required to have at least one movement point remaining to disband. Fortified zones are an exception as they may disband even though they have zero movement points and they are not required to be three hexes from an enemy unit; the only requirement is that they not be frozen. The Disband Unit option will not appear in the unit detail window if the above conditions are not met. Disbanding requires and expends one Admin point, with the exception of depleted units in the east front box when east front control option is enabled, which can be disbanded at no admin cost (23.3). Note that pilots from disbanded air group units remain specialized for that type of aircraft and will not be available to fill vacancies for other aircraft types (8.2.2).

V1.00.44 – 9 June 2015

An air Group on an isolated air base may not disband.

11. LEADERS

Leaders play an important role in Gary Grigsby's War in the West. Every headquarters unit (with the exception of air base and rail repair units) has an assigned leader that commands and influences all units attached to that HQ, to include attached HQ's and their attached units. Each leader has a rank and designations that together determine what level and type of HQ unit they can command. They also have leadership ratings that affect a wide range of game functions, from their ability to be promoted or avoid dismissal and a possible firing squad, to their ability to influence the morale, fatigue, movement points, attachment costs, combat value and combat performance of attached units under their command.

11.1. LEADER RANKS, DESIGNATIONS AND RESTRICTIONS

Normally a HQ is commanded by a leader of the same nationality except for certain Western Allies HQ units in the Mediterranean area (11.4.3.2).

Below is a list of rank names and abbreviations for different nationalities (from lowest rank to highest rank). Note that Western Allies Italian leaders use US ranks and most if not all other Allied leaders use Commonwealth ranks. If no special ranks are given for air or navy of a nationality, then the army ranks are used.

German Army

Generalmajor GENM
Generalleutnant GENL
General GEN
Generaloberst GENO
Feldmarschall FM

German Air Force

Generalmajor GENM
Generalleutnant GENL

General der Flieger GENF
Generaloberst GENO
Generalfeldmarschall GFM

German SS

Brigadeführer BGF
Gruppenführer GRF
Obergruppenführer OBGF
Oberstgruppenführer OBSF
Reichsführer-SS RFSS

Italian Army

Brigade General BGEN
Division General DGEN
Corps General CGEN
Army General AGEN
Marshall MAR

US Army and US Army Air Force

Brigadier General BGEN
Major General MGEN
Lieutenant General LGEN
General FGEN
General of the Army AGEN

British Commonwealth (CW) Army

Brigadier BRIG
Major General MGEN
Lieutenant General LGEN
General FGEN
Field Marshal FM

British Commonwealth (CW) Air Force

Air Commodore ACOM
Air Vice Marshal AVM
Air Marshal AM
Air Chief Marshal ACM
Marshal of the RAF MRAF

French Army

General de brigade GENB
General de division GEND
General de corps GENC
General d'armée GENA
Marechal de France MARF

Polish Army

General Polski
General armii
General broni
General dywizji
General brygady

11.1.1. LEADER DESIGNATION

Leaders are given a designation that determines the maximum level of headquarters they can command (7.7.1). Some will only be able to command Corps/Air Corps and Army/Air Army headquarters (Type 3 and 4 HQ units). Others can command Corps/Air Corps, Army/Air Army, and Army Group headquarters (Type 2, 3 and 4 HQ units). At the highest level, leaders can command Corps/Air Corps, Army/Air Army, Army Group and High Command headquarters (Type 1, 2, 3 and 4 HQ units).

A leader may not be placed in command of a headquarters unit that is at a higher level than his Max Command level. This maximum command level cannot be changed by promotion to a higher rank.

11.1.2. LEADER COMMAND RESTRICTIONS

Leaders may be restricted as to what kind of headquarters unit they can command. The restrictions include ground only, SS only, air and ground, and air only. German SS headquarter units may only be commanded by a SS leader. In addition, a SS leader cannot command a non-SS headquarters unit.

11.1.3. LEADER DESIGNATION AND COMMAND RESTRICTIONS SUMMARY

Max Command Level	Corps/Army	Army Group	High Command	
Command Restrictions	Ground Only	Air and Ground	Air Only	SS

11.2. LEADER RATINGS

There are eight leadership ratings, Political, Morale, Initiative, Administration (Admin), Mechanized (Mech), Infantry, Air and Naval, with the last four collectively referred to as combat ratings. Leadership ratings range from one to nine.

11.2.1. POLITICAL RATING

The political rating affects the cost to replace the leader, as well as the probability that the leader will be promoted for victories or dismissed for defeats. Though the actual admin cost is based on the differential in political ratings between a leader and the leader in the next higher headquarters, generally, the higher the political rating, the greater the cost in admin points to replace a leader. A high political rating also decreases the chance that the leader will be dismissed and possibly executed due to a poor win/loss ratio. In addition, a leader with a high political rating will have a greater probability of being promoted, all other things being equal. A low political rating will have the opposite effect on cost of replacement and chance of dismissal or promotion.

11.2.2. MORALE RATING

The Morale leader rating is used for determining unit combat value in battle, determining win/loss credit, adding or recovering fatigue in the unit's ground elements, and rallying routed units.

11.2.3. INITIATIVE RATING

The Initiative leader rating is used for determining the actual number of movement points a unit will have during the turn, the ability of ground elements to fire and to hit during combat, the ability of support units and combat units in reserve status to commit to a battle, and the ability to reduce casualties by turning a low odds hasty attack into a reconnaissance in force.

11.2.4. ADMINISTRATIVE (ADMIN) RATING

The Admin leader rating is used for determining the actual number of movement points a unit will have during its turn, checking for repair of damaged aircraft and ground elements, determining the cost of attaching units to the leader's headquarters unit, determining the number of air directives an air HQ unit can be assigned, and determining fuel and supplies wastage as a result of air missions. When a motorized unit is performing an admin leader check, leaders of Panzer Army or Panzer Corps HQ units involved in the admin leader check receive a +1 to their admin rating during the check. Admin checks are specifically affected by the actual number of support squad ground elements in the leader's HQ unit as compared to the HQ unit TOE (11.3).

11.2.5. COMBAT RATINGS

Mechanized (Mech) and Infantry Ratings: These ratings for leaders assigned to a headquarters unit with combat units attached are part of the ground combat system and are used to determine the overall combat value as well as the ability of the ground elements in the units under their command to be able to fire and to hit opposing ground elements. Successful rating checks will increase combat value and improve the chance of ground elements to both fire and to hit.

Air Rating: For air leaders, a successful air combat skill check will result in more ready aircraft from an air group unit participating in a particular air mission (17). The maximum number of air directives a leader of an eligible air HQ unit can be assigned is determined by adding the air rating and the admin rating and dividing by two, with the minimum number being four.

Naval Rating: Amphibious HQ units do not have leaders, so the naval rating is not currently used in Gary Grigsby's War in the West, but this reference is included for use in future games in the series.

11.2.6. LEADER RATINGS INCREASE

Based on the number of wins compared to losses (11.4.1), leaders may see some of their skill ratings increase. Administrative, initiative, mech, infantry, and air ratings can only be increased if they are currently less than six. Only air leaders in command of air headquarter units can increase their air rating. Mech and infantry ratings can only be increased for leaders in command of non-air headquarter units. Political and morale ratings can only be increased if they are currently less than eight. The naval skill rating cannot be increased. The chance of increasing a skill rating becomes more difficult as the type number of headquarters unit the leader commands decreases. For example, a leader in a High Command (Type 1) command will have a much more difficult time increasing their skill rating than a leader in command of a Corps (Type 4). Leaders check to see if any of their ratings increase once each turn during their side's logistics phase.

11.3. LEADER RATING CHECKS

Leader ratings can have an impact on virtually all actions taken by units; to include both the logistics and action phases of the

turn. Leaders will literally conduct thousands of checks using one or more of their ratings for everything from combat value (CV) determination to the number of admin points expended to attach a unit. Initiative, admin and morale checks are the most ubiquitous, but infantry or mech checks figure prominently in ground combat, air rating checks are made for every air mission, and naval rating checks occur during amphibious transport. There are no political rating checks, though the political rating is used to determine Leader promotion, dismissal and the admin costs for attaching units (11.4).

11.3.1. LEADER RATING CHECK PROCEDURE

Each leader rating check is essentially the computer generating a Random(x) value where if the result is less than the leader rating then the check is passed, but if the result is greater than the rating, the check fails. Leaders of headquarters units where the number of attached units exceeds the command capacity (7.7.2) will have their chances of making the leader rating check reduced with the more excess units, the less the chance of a successful check. In addition, leader admin checks are modified by the amount of support squad ground elements in the HQ unit of the leader conducting the check (7.7.1.1). Approximately one admin point is subtracted from the leader's admin rating for every ten percent the HQ unit is below its TOE support squad strength, with a max reduction of five points.

11.3.1.1. CHAIN OF COMMAND RATING CHECKS

If a leader fails their rating check, the leader of the next higher headquarters unit in the chain of command will then conduct the check, but with the base value of the check doubled. Each failed check will in turn result in the leader of the next higher headquarters in the chain of command conducting a check with the base value doubled each time until the leader of the High Command headquarters unit in the chain of command succeeds or fails the check. In addition to the doubling of the base value for higher headquarters units, a modifier based on the level of the headquarters unit and the range from the combat unit to that headquarters unit is also included in most checks (11.3.2). Note that the number of possible checks and the number of times the base value is doubled is dependent on where the unit is attached. For example a German unit attached directly to OKW (High Command headquarters unit) will have one leader check at the base value. The same unit attached to a Corps could have up to four leaders conduct the check at the Corps (10), Army (20), Army Group (40) and OKW (80) levels, though the base value would be doubled for each failed check as noted in parentheses after each HQ unit. The base value used in leader checks (10, 20, 40 or 80) is modified for units that do not report to a Corps HQ. In these cases, the value used for the first HQ in the chain has 2 added to it (12), while the second HQ in the chain would have 4 added (24) and the third in the chain 6 added (46).

11.3.2. COMMAND RANGE MODIFIER

A command range modifier is applied to leader rating checks conducted by leaders in all headquarters units to which the unit involved is in the chain of command, to include the HQ unit to which the unit is directly attached. Naval and morale leader rating checks are exempt from the command range modifier. Each level of headquarters unit has a designated number that the range from it to the unit is divided by to get the modifier after first subtracting five from the range to the HQ units, with the value never set below zero. This means that tracing five or less hexes to any HQ or less than 91 hexes if to an air command HQ (7.7.4) results in no range penalty.

The modifiers are as follows:

HEADQUARTER UNIT LEVEL	RANGE MODIFIER DIVISOR
Corps (Type 4)	1
Army (Type 3)	2
Army Group (Type 2)	3
High Command (Type 1)	4

For example, if the leader of an Army Group HQ unit that was 15 hexes away from a unit was conducting an initiative check, 3.33 (15-5/3) would be added to the random number value.

11.4. LEADER PROMOTION AND DISMISSAL

Leaders can be automatically promoted or dismissed depending on their performance as measured in wins as compared to losses as well as their political rating. In some cases, the dismissed leader may be executed and permanently removed from the game. Players can also manually dismiss leaders and select another leader as a replacement. A leader may be limited or restricted in the kind of headquarters they can command, to include level (Corp/Army, Army Group, High Command) and type (SS, air or ground) (11.1).

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Leader check example: Let's say a German combat unit is attached to a Corps HQ unit with a leader initiative rating of 6 and the corps HQ unit has 11 command points (CP) worth of units attached to it and as a Corps HQ unit it has a command capacity of 8 CP. So the first test for the unit making an initiative rating check is to see if random (10+ (11- 8)) <6. If random 13)

<6 the leader rating check for the combat unit passes. If the leader fails the check, then the leader in the next HQ unit up the chain of command conducts an initiative rating check. Let's say that it is an Army HQ unit that is 10 hexes from the combat unit, has 22 command points worth of units attached and as an Army HQ unit it has a command capacity of 24 CP, and a leader with an initiative of 7. The check would be to see if $\text{random}(20 + 0 \{\text{due to command capacity not being exceeded}\} + (10-5/2) \{\text{because army HQ units have a range modifier value of 2}\}) < 7$. Or $\text{random}(22) < 7$. (Values are rounded down). As you go up the chain of command, the base value of 10 doubles each time you go up a HQ level. If the Army HQ unit leader rating check failed, then the Army Group HQ unit leader would try and the base would be 40, although since it is a higher level HQ, the range effect divisor will be 3 instead of 2. If the Army Group check fails, then OKW makes a check. As you go up the chain, the chance to make the check goes down a lot due to the doubling. Also, note that if the unit reported to an Army instead of a corps, then the first check would still be made using a base of 10 and no range modification. If it failed, then the Army Group would check with a base of 20 (10 doubled). Clearly with each HQ up the chain, the chance of the HQ passing the test goes down. The advantage of having a unit attached at the lowest level is that the unit has more HQ units in the chain, only one of which must pass the check.

11.4.1. BATTLE WIN AND LOSS CREDIT

A leader may be credited with one win or one loss every time a combat unit in their chain of command participates in a battle. For Air leaders, a win/loss situation occurs if an air group attached to an air base unit in their chain of command participates in an air mission that results in a set differential in losses (17.5). In each case, this includes all higher headquarters up to the combat unit's High Command headquarters. For example, if the German 9th SS Panzer Division participates in a battle won by the Axis, The 9th and the leaders of its higher headquarters units, in this case II SS Panzer Corps, 6th SS Panzer Army, Army Group B, OB West, and OKW, would all be credited with one win. Wins and losses are recorded in the individual leader detail windows as well as in the unit list in the commander's report (hotkey c). The terms wins and losses are interchangeable with victories and defeats.

When a leader earns a win or a loss, there is a chance that it will not count for promotion or skill rating increase purposes. Although the total wins and losses are displayed for the leader as described above, the actual total used by the promotion system is tracked separately and will in most cases be less than the total wins and losses shown on displays. Whenever a leader wins or loses a battle, there is a chance that the win or loss will not be counted when calculating whether the leader is promoted or increases a skill rating.

11.4.2. LEADER PROMOTION

Leaders undergo a promotion check once each turn during their sides logistics phase. A leader is promoted to the next rank if they pass the check, which is based on their political rating and their number of combat wins and losses. Promotion will result in the zeroing out of that leader's number of wins and losses. A leader with a max command of high command may be promoted to the highest rank if selected to command a high command HQ.

11.4.3. LEADER DISMISSAL AND REPLACEMENT

11.4.3.1. LEADER AUTOMATIC DISMISSAL

Leaders can be dismissed automatically by the computer (representing the national political and military leadership) due to a poor win/loss ratio or when a HQ unit is moved from the East Front Box (23.1.3) to the Western Front if the Eastern Front option is enabled. In some cases of poor win/loss record dismissal the leader will be executed and permanently removed from the game rather than being returned to the leader pool. Leaders killed by execution will be noted in that side's Logistics Phase Event Log (5.4.12) at the beginning of the action phase. In all cases of automatic leader dismissal, the computer will automatically select a replacement and the event will be reflected in the logistics phase event log. There is no admin point cost associated with automatic dismissals.

11.4.3.2. LEADER MANUAL DISMISSAL

The player can manually dismiss a leader and replace them by first selecting the leader in the headquarters unit detail window (26.3.13) and then selecting the dismissal cost link in the leader detail window. This will bring up the pick new leader window (26.3.23), which allows the player to select from a list of all eligible candidates as replacement leaders. The list is ranked by the computer based on skill ratings and the current rank of the candidate replacement leaders. To be eligible, leaders must have the proper level and command restriction designations (11.1). Leaders can serve one level up and two levels down from the optimum rank for the HQ level.

11.4.3.3. BRITISH/AMERICAN SPECIAL HQ UNITS

For the Western Allies, any Army Group, High Command or Air Command HQ unit that is currently located in a hex where $Y > 226$ can have their leader replaced by any Allied leader irrespective of nationality. This is to allow the Allied player to put leaders into Mediterranean area HQ units from nationalities other than that of the HQ unit.

11.4.3.4. COMMAND OPTIMUM RANK

The Optimum rank for each command is summarized in the below table. An exception is that for air HQ units, the rank r required to command the HQ is one lower than that of other HQs.

HQ UNIT TYPE	WA OPTIMUM RANK	AXIS OPTIMUM RANK
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Corps (Type 4)	MGEN	GENL
Army (Type 3)	LGEN	GEN
Army Group (Type 2)	FGEN	GENO
High Command (Type 1)	AGEN	FM

11.4.3.5. DISMISSAL AND REPLACEMENT ADMIN COSTS

There are variable admin costs associated with dismissing leaders. The pick new leader window (26.3.23), which allows the player to select from a list of all eligible candidates as replacement leaders will list the AP cost in a x + x format with the first number being the cost to bring the new leader in to the position and second being the dismissal cost for the dismissed leader. A leader with a rank one higher than the optimum rank may fill an HQ position at no extra admin cost, but leaders with a rank one lower than the optimum rank that fills an HQ position will normally require the expenditure of extra admin points. When a leader is dismissed, some leaders that are available as replacements will have less than the optimum rank to take the new position. These leaders have a P in the Pick New Leader window next to the number of admin points it will take to appoint the leader, which will usually be significantly higher than the admin points required for a leader with the optimum rank for the position. For Army Group and High Command headquarters units, leaders with a P can be selected, however, they will remain at their current rank until they are promoted through the normal promotion process.

11.4.3.6. LEADER PROMOTION SKILL RATING REDUCTION CHECK

For Corps and Army headquarters units, the leader will be automatically promoted if selected. If promoted this way, the leader must make a check for each skill rating to see if it drops one point. There is less of a chance for a particular skill rating to drop if that skill rating has been previously reduced. If a leader is killed and the computer replaces the dead leader with a leader that requires a promotion, a similar check for a drop in skills occurs. Leaders who are promoted through the normal promotion check process do not check for a decrease in skill ratings.

11.5. DEATH OF A LEADER

Leaders can be killed and permanently removed from the game due to dismissal, headquarters relocation, air attack and other enemy action. Leaders who are automatically dismissed due to poor performance (losing battles) may be executed. A low political rating increases the chances of a dismissed leader being executed. There is a 15 percent chance that when a headquarters unit is relocated or forced to execute a displacement move, the assigned leader may be killed or captured. In either case, if the HQ is isolated the chance of the leader being killed increases to 50 percent. There is also a very small chance of a leader being killed if their headquarters unit suffers casualties from enemy air attack, to include ground attack, air interdiction and ground support missions. Finally, there is a small chance that leaders may be killed due to other enemy action. The probability of this occurring is impacted by the distance the leader's headquarters unit is located from enemy units, with headquarters units closer to enemy units having an increased chance of having their leader killed. Any leader in an HQ that is more than 10 hexes from the enemy will have his chance of being killed reduced by two thirds.

12. ADMINISTRATIVE POINTS

Administrative (admin) points represent the ability of a side to modify their command and control and supply structure, to include units, leaders and supply depots. Administrative points can be used to create new airbase units, fortified zone units, and depots.

12.1. GAINING ADMIN POINTS

Each player starts with a number of admin points that varies depending on the scenario. Each player receives additional admin points during their respective logistics phase, also depending on the scenario. Information on the number of admin points each side will receive in a scenario can be found in the scenario description on the Load Scenario screen (3.3.6). In addition, German per turn APs are doubled once there is an Allied controlled hex in German Occupied Europe north of row 215. Placing a combat unit in static mode will result in the gain of a certain number of admin points (10.2.1). Each player may have a maximum of 500 admin points. Any additional admin points are lost during their logistics phase. The number of admin points will never fall below zero, but a player cannot expend admin points if it would take their available points below zero.

12.2. EXPENDING ADMIN POINTS

There are numerous actions that require the expenditure of administrative points (AP). The majority of actions cost one AP, but there are some higher fixed AP costs and some AP costs that vary depending on the situation. Building/expanding air base and fortified

zone units, creating depots, priority factory repair, disbanding a unit, and assigning a level bomber to an air transport mission all have a fixed AP cost. In most cases, the transfer of Anti-Aircraft support units from town, city and urban hexes will result in the expenditure of a fixed amount of admin points based on the type of unit (7.4.1). If the East Front option is enabled (23.0), transfer of units to and from the East Front box has a fixed AP cost based on the type of unit and the direction of transfer. A variable number of AP are expended to change the leader of an HQ unit (11.4.3) and to temporarily motorize a non-motorized unit (14.1.3). Placing a unit in static mode will generate additional admin points for the player; however, reactivating a static unit will require the expenditure of admin points. Static units that are withdrawn will automatically be reactivated in the same logistics phase, resulting in an involuntary expenditure of admin points. In all cases, the admin points gained or expended is based on the number of organic vehicles in or needed by the unit (10.2).

With the exception of some circumstances involving anti-aircraft support units (7.4.1), admin points are not needed to change the HQ that a CU or SU reports to (however, units may only change their command once per turn, noted by an asterisk, and they will suffer a - 1 for admin rolls on the turn the change was made).

12.2.1. ADMIN COST SUMMARY

The following table summarized admin costs.

ACTION	ADMIN POINT COST	REMARKS
Disband Unit	1	Section 10.3 (1)
Create Supply Depot	1	Section 20
Build Size 1 Air Base Unit	1	Section 8.3.2
Expanding Air Base Unit	1	Section 8.3.2
Priority Repair	1	Section 21.2.1
Assign a Level Bomber air group unit to air transport mission (Single or Multiple Missions)	1	Section 5.4.5
Reactivate Static Unit	Varies	Section 10.2.2
Temporary Motorization	Varies	Section 14.1.3
Change leader of a HQ unit	Varies	Section 11.4.3
Create Fortified Zone Unit	4/1 (2)	19.1.2
Transfer AA Battalion from City to High Command HQ	3	7.4.1
Transfer AA Regiment from City to High Command HQ	10	7.4.1
Transfer LW AA Battalion from City to High Command HQ	15	7.4.1
Transfer LW AA Regiment from City to High Command HQ	50	7.4.1
Transfer eligible AA unit from one city to another	1	7.4.1 (3)
Transfer eligible AA unit from HQ unit to a city	1	7.4.1
Move a non-motorized Division from the East Front Box	2	Section 23.1.3
Move a motorized Division from the East Front Box	3	Section 23.1.3
Move a Corps HQ from the East Front Box	3	23.1.3
Move an Army Group/Army HQ from the East Front Box	2	23.1.3
Move a Brigade or Regimental size non-motorized unit from the East Front Box	1	Section 23.1.3
Move a Brigade or Regimental size motorized unit from the East Front Box	2	Section 23.1.3
Move an air group unit from the East Front Box	1	Section 23.1.3
Move a support unit from the East Front Box	1	23.1.3
Move any unit to the East Front Box	1	23.1.3

Notes

- (1) Exception - there is no admin cost to disband depleted units in the east front box (23.3).
- (2) The AP cost for the Axis player building in an Italian nationality hex that is not adjacent to a non-lake water hex is 1 AP.
- (3) RR Flak units can move between cities at no AP cost. Static AA units, to include German Flak Towers cannot be moved.

13. ENEMY UNIT DETECTION LEVEL (DL) AND FOG OF WAR (FOW)

Detection level (DL) is the determination of how much information is known about on-map enemy units. The higher the detection level, the more information is known and the more effective attacks will be on that unit. The default game option displays all on-map enemy units with full information listed in the hex pop-up, no matter their current detection level. Players have the option to enable Fog of War (FoW), varying both the hex pop-up information available and the ability to see on-map enemy units based on their detection level.

13.1. DETECTION LEVEL (DL)

Each unit on the map as well as attached support units is automatically assigned a detection level from one to ten, based on factors to include distance from enemy units, covering terrain (6.2.1) and the results of air reconnaissance. A higher detection level will increase the effectiveness of ground and air combat against that unit. The hex pop-up text will display detection levels for on-map units, to include construction support units and Anti-aircraft support units attached to cities. Note that if FOW is enabled, AA support units will no longer be displayed in the hex pop-up.

Unit detection levels will change over time and can be influenced by player actions. During the logistics phase, an airbase unit will have its DL decline by one, while non-airbase units will have their DL decline by Die (5). The DL levels of enemy combat units that are adjacent may then increase. Adjacent enemy combat units compare scouting values for the different units to determine changes in DL levels.

In addition, every time a unit moves next to an enemy unit, the enemy's DL will usually go up due to automatic scouting and probing attacks. Losses from these scouting and skirmishing actions are represented by higher attrition levels for adjacent enemy units (9.5.2). Combat against enemy units will also increase their DL. The DL of units that move away from the enemy will decrease over time.

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Display Change - Unit name is shown on counter of enemy units with detection 5 or greater.

13.1.1. AIR RECONNAISSANCE AND DETECTION LEVEL

For non-air base units, air reconnaissance can raise detection levels up to a maximum of four as follows:

Maximum Detection level 1: Non-Air base units located in non-clear terrain further then 3 hexes from supplied enemy units.

Maximum Detection level 2: Non air base units located in non-clear terrain and not adjacent to enemy units.

Maximum Detection level 4: Non-air base units located in clear terrain

Air reconnaissance can raise the DL of air base units up to the maximum of 10.

The Show air recon levels button (hotkey Shift-t) in the map information tool bar (5.1.2) will graphically display the level of air recon coverage with the lighter the shade in the hex, the better the air recon level. The actual numerical air recon level is listed in the hex pop-up. Strategic recon only impacts the factories in the city hexes reconnoitred. Strategic recon will only target town, city and urban hexes while normal air recon can target any hexes and raises the Detection level of the hexes which in turn increase the DL of the units there.

13.1.2. NAVAL AIR PATROL AND DETECTION LEVEL

Units utilizing naval and amphibious transport that remain at sea can have their detection levels raised by enemy naval interdiction in their water hex. Detection levels for units in water hexes are checked at the end of the logistics phase and at the end of the air execution phase.

13.2. FOG OF WAR (FOW)

The default game options setting has all enemy units visible on the map with accurate information on type, name, size and combat value included in the hex pop-up information. The DL of each unit is still computed and impacts the combat effectiveness of any attacks against those units, but the location of all enemy units is known to the player, to include units with a detection level of zero. Enabling the Fog of War (FoW) game option (3.3.3) does not change how the DL is computed, however, all enemy units must now be sighted (have a detection level greater than zero) to be seen on the map (airbases are always visible on the map). Note that computer players are not affected by FoW, however, the AI does have the same DL restrictions as human players. In addition, detection level determines both the amount and the accuracy of the information known about a unit. Accurate combat values (CV) may not be displayed even at the highest detection level, and the potential size of the error increases as the DL number decreases.

To preserve FOW, during the amphibious invasion phase and air planning phase of an AI player turn, units will not be shown on the map. In addition, during multiplayer and PBEM, the map is blacked out during the amphibious phase.

13.2.1. FOW AND DL INFORMATION

As detection level increases, the on-map unit and its hex pop-up will display the following information:

Detection Level 1: The unit counter will be blank. A unit with detection level less than 3 won't show its nationality counter color. In this case it will be displayed as generic German/USA color.

Detection Level 3: The Unit type will be displayed.

Detection Level 5: The Unit name, unit size and CV will be displayed. Enemy units that start adjacent to friendly units will have a minimum DL of 5. Note that Unit counters will only display SS / Elite / LW / Guards status (coloring) if their detection level is 5 or greater.

Detection Level 7: Soft factors can be observed (5.1.3).

Support Units: Support units attached to cities, HQ units and ground units have detection levels in the same manner as on map units as their DL increases.

Anti-Aircraft Support Units: When FOW is enabled, flak values displayed on the map area (Shift-o) will vary, with the lower the detection level, the less accuracy in the value displayed. In addition, AA support units attached to cities will no longer be displayed in the hex pop-up text.

Air Base Units: When FOW is enabled, the lower the detection level, the less accurate will be the information in the hex pop-up text regarding enemy air group units located at the airfield. The accuracy of the damage to the air base unit will also vary with the detection level.

Stacked Units: When FoW is enabled, no CV/MP numbers will be printed on an enemy counter if there is no unit with a detection level greater than 4 in the stack. If there are units with DLs both greater than four and four or less in a stack, numbers will be printed, and a '?' will be printed instead of the - or = between the numbers to indicate that in addition to the estimated CV strength in the hex, there are units of unknown strength in the hex. If the top unit in the stack has a DL of 1 or 2, a blank unit type box will appear on the top unit counter to indicate it is of an unknown type.

Air Mission Graphics: The graphic display (16.1.4) of any enemy interception and ground support missions on the map area will only show the direction the enemy air group units came from, not the entire line back to the air base unit they flew in from when FoW is enabled.

Enemy Fortification Levels: When FoW is enabled, information on enemy fortification levels (15.3.2) will only be displayed for hexes that are adjacent to a friendly unit or for hexes that contain a detected enemy unit with a DL of at least three.

13.2.1.1 FACTORY DAMAGE AND FOW

When FOW is on, each time an enemy factory is bombed a picture is taken of those factories and an estimate of damage is made. In addition, strategic recon flights (17.3.1) will attempt to take pictures of all factories in a hex, which will provide damage estimates that are more accurate than estimates provided by bombers conducting strategic bombing missions of those factories. The damage at the factory is estimated when the picture is taken, and that estimate is displayed for the enemy factory in numerous locations to include the Commander's Report (26.2.7), city detail window (26.3.28), air directive city selection list (5.3.8, 5.3.9), and pop-up text (5.2.1)). This value can be more or less than the real damage. This fogged value will remain until a new photo is taken at some point in the future. The log report shows all the photo reports and how long it's been since the last photo was taken of the target (1= current turn). When determining what factory to fly a strategic bombing against, the computer will use the FOW damage values. This means that a target that is thought to be heavily damaged will be less likely to be bombed, and it's the fogged up damage level that is used.

The Commander's Report screen allows players to view both enemy and friendly locations and factories, and the info shown is the fog of war adjusted number when FOW is enabled.

PLAYERS NOTE

It is a good idea to plan air recon missions over factories and hexes both before and after they are bombed. For example, if you are going to bomb some fuel factories on days 2 and 5, you want to be sure to recon on days 1, 3 and 6. This is so that you can have good information on the target before bombing (so you pick the optimum targets to bomb) and good information on the results of your bombing (so your next strikes pick the optimum targets and so you have good info for your next air planning phase). The more recon the better, but if you have limited recon assets and flying every day is not an option, try to space them before and after your bombing missions. This can be done either globally in the air doctrine screen or when creating

a specific air directive.

13.2.2. MOVEMENT FOG OF WAR (FOW)

With just FoW enabled, unless there is an unbroken enemy front line, the map preferences show movement allowed and show movement path (3.3.5) allows the player to see hexes behind enemy lines that do not contain enemy units up to the limit of the selected units allowed movement. To militate against this capability, when FoW is enabled, the additional game option of movement FoW will become available and can only be used in conjunction with FoW. If movement FoW is enabled, the show movement path and show movement allowed preferences will only display movement options to hexes if the movement path could be traced via friendly/pending friendly hexes or to hexes adjacent to friendly/pending friendly hexes.

GAME PLAY TIP

Movement FOW takes away an “enhanced recon” feature caused by the nature of the movement system, but at a cost in play time. Basically, you will have to make an increased number of shorter moves when using move FOW as you won’t be allowed to move far into enemy territory. Ultimately your unit can cover the same ground, but with more mouse clicks and more individual moves. Also, it won’t be as easy to determine the fastest path to an enemy hex deep in enemy territory.

14. GROUND UNIT LAND MOVEMENT

There are two general types of land movement for ground units, tactical and strategic rail. In addition, units can move by sea transport (15.0) and certain combat units can be transported by air (17.3.8, 17.3.9). Tactical movement is from ground hex to ground hex using movement points (MP) and includes the cost of terrain, of moving into enemy zones of control and enemy hexes, and the cost of attacking enemy units. Strategic rail movement represents loading units on to trains for transport over friendly rail lines using strategic movement points (SMP), but also depends on the availability of railyard rail capacity and rail usage on rail lines. Units using strategic rail movement have their tactical MP reduced proportionally to the expenditure of SMP. Players can undo a move (‘undo’ button or hot key ‘u’) unless the move resulted in losses from air interdiction, turned an enemy hex into a pending friendly hex, attacked an enemy unit or spotted an enemy unit that previously had a detection level of zero.

14.1. TACTICAL MOVEMENT

On-map units begin each turn with a certain number of movement points (MP) determined by a number of factors, to include unit type, whether it is motorized or non-motorized (7.9), supply status (fuel for motorized units, supplies for non-motorized units), reductions as a result of being attacked the previous turn, vehicle shortages, fatigue, and leader admin and initiative checks. Units have a base MP allowance that they cannot exceed and a minimum that they will always be able to move. Units that have not moved can always move at least one hex, even if it costs more than their MPs. To make this minimum move, the unit must be the only unit selected. Attacking units that move into a hex vacated by a defender may incur additional movement costs to move from the vacated hex during the turn the combat occurred.

14.1.1. MAXIMUM AND MINIMUM MOVEMENT POINTS

Maximum MPs: The following are the base maximum MPs for on-map units:

Non-Motorized Combat units (except Cavalry) units – 16 MP

Cavalry Combat units – 22 MP

Headquarters units – 50 MP

Rail Repair HQ units – 16 MP

Motorized Combat units – 50 MP

Static Units – 2 MP

Minimum MPs: Motorized units will always receive at least one MP, even when out of fuel. Non-motorized units will always receive at least eight MP, even when out of supplies. The exception is static units that will receive two MP. Players can verify whether a unit is motorized or non-motorized on the right hand side of the applicable unit detail window.

14.1.2. DETERMINING MOVEMENT POINT ALLOWANCES

The following steps are used by the computer to determine a unit’s MP allowance during the logistics phase at the start of a turn:

- 1) Start with base MPs (14.1.1)
- 2) Subtract MPs based on attacks made against this unit during the prior player-turn (14.1.2.1).
- 3) Calculate average fatigue of the unit based on the number and fatigue of each type of ground element. Reduce the number of MP's by the average fatigue divided by ten, rounded down.
- 4) Check for leader initiative. If all leaders in the chain of command fail the initiative check, then multiply MPs remaining by 80 percent, rounding down.
- 5) Check for leader admin. If all leaders in chain of command fail the admin check, then multiply MPs remaining by 80 percent, rounding down. Note that units that did not move in the previous turn will automatically pass their next turn's admin check.
- 6) Reset the unit's MPs to eight if determined to be lower than eight.
- 7) Determine if fuel (motorized unit) or supplies (non-motorized unit) is sufficient to enable the unit to use the remaining MPs it has. For example, if a motorized unit has only 50 percent of its base MPs remaining after steps 1 through 4, it will only require 50 percent of fuel needed. If fuel on hand is 60 percent of what the unit needs to use its remaining MPs, then it can only move 60 percent of those MPs, rounded down.
- 8) Check to see if the movement allowance is capped by a shortage of vehicles in the unit as follows:
 Motorized Units = Maximum of $16 + (34 * (\text{vehicles in unit} / \text{vehicles required by unit}))$
 Non-Motorized Units = Maximum of $6 + (10 * (\text{vehicles in unit} / \text{vehicles required by unit}))$
 Cavalry Units = Maximum of $6 + (16 * (\text{vehicles in unit} / \text{vehicles required by unit}))$
- 9) If a non-motorized unit, reset the unit's MPs to eight if determined to be lower than eight. If a motorized unit with zero MPs, reset the unit's MPs to one. If a static unit with less than 2 MPs, reset the unit's MPs to two.

As an example of the above rules, a motorized Axis unit that was not attacked during the last player-turn will start with a base MP of 50. If average fatigue were 22, then the unit MP would be reduced by 2 to 48. If all the leaders in its chain of command failed their initiative and admin checks, the unit's MPs would be reduced first to 38 and then to 30. As 30 is 60 percent of the base MP of 50, the unit would need at least 60 percent of required fuel in order to move 30 MPs; if it had only 45 percent of its fuel needs, its MPs would be lowered to 22. If the unit has 80 percent of its vehicles, it has a maximum of $16 + (34 * .8)$ or 43 MPs. Since the unit has only 22 MP, it is not affected further by the vehicle shortage. Had the unit had 100 percent of its fuel and had passed the leader and admin checks, instead of having 48 MPs the unit would be reduced to 43 MPs.

14.1.2.1 IMPACT OF ENEMY ATTACKS ON UNIT MOVEMENT ALLOWANCE

When a unit is attacked, depending on the odds, it will suffer a loss in movement points during its next turn due to the attack. The loss of MPs is equal to the standard attack cost that a unit would have paid had it made the attack (so if it was a deliberate attack and the defending unit is motorized, it would pay lost 16 MPs from its next turn MPs). This standard attack cost is modified as follows based on the odds of the attack:

- No modifier if odds are 1.5 to 1 or greater
- 75 percent of cost if odds are 1 to 1 to 1.49 to 1
- 50percent of cost if odds are .5 to 1 to .99 to 1
- No cost if odds are less than 1 to 2

When a unit is attacked in the amphibious phase, which comes after the unit's MPs are set, any loss of MPs due to enemy attacks is immediate and can leave a unit with 0 MPs at the start of their turn.

14.1.3. TEMPORARY MOTORIZATION OF NON-MOTORIZED UNITS

Any non-motorized combat unit that is in supply may triple its movement points (MP) for the current turn by clicking on 'motorize unit' from the combat unit detail screen (26.3.14), but at a cost in vehicles drawn from nearby depots and/or the motor pool as well as administrative points (AP). One vehicle is required for each ground element (ready or damaged) and there must be available vehicles in nearby depots or the motor pool. When a unit is temporarily motorized, vehicles are taken from the depot that the unit has most recently drawn supply from. If no unused vehicles are in that depot, then freight in the depot can be converted to vehicles from the pool (if there are vehicles in the pool). If there are not enough vehicles, than the unit cannot be motorized.

The AP cost to motorize the unit is based on the number of vehicles required from the motor pool and is equal to $1 + \text{number of trucks required} / 500$ (truncated). The number of vehicles required to motorize the unit and the number of admin points required for temporary motorization will be displayed next to the Motorize Unit text in the unit detail screen. Only units that have not yet expended any MPs during that turn may temporarily motorize. The unit will show as Motorized for the rest of the player's turn and will pay motorized unit costs. Mountain units that have been temporarily motorized pay motorized movement costs in mountain hexes (not mountain unit movement costs).

All temporarily motorized units and Western Allies motorized infantry units (whether motorization is temporary or permanent) pay an additional +1 MPs when moving into an enemy controlled hex (in addition to normal costs).

Normally a temporarily motorized unit will be automatically demotorized in the next friendly logistics phase, but the player will be offered an option to have the unit retain motorization in future turns. In these cases the player must then use the Demotorize button to remove the vehicles and return to non-motorized movement. This demotorization will then occur in the next friendly logistics phase.

Non-motorized support units check in the logistics phase to see if they are attached to a motorized unit, and if so, they are given extra vehicle needs as if they were being motorized themselves. Unlike the on map units, they are not immediately provided

with vehicles and need when the parent unit is temporarily motorized. This applies to support units attached to temporarily motorized combat units or attached to permanently motorized combat units. In any logistics phase when the support unit is no longer attached to a motorized unit, it will reduce its needs and return the excess vehicles.

Support units don't cost AP to motorize (they just do it automatically when called for per above). Note this only applies to support units directly attached to combat units. When attached to HQ units, they remain in their natural state (i.e. they don't motorize even though the HQ is motorized).

No AP's are gained when a unit de-motorizes. Units must be de-motorized prior to being transported by air. Motorizing a unit preparing for an amphibious invasion will not impact its preparation points.

V1.00.29 – 19 March 2015

Rules Clarification - Units that are temporarily motorized and are retaining their motorization each turn pay admin points for the motorization each turn (but not to reduce APs below 0).

14.1.4. MOVEMENT FOR AIR DROPPED COMBAT UNITS

Combat units that are air dropped, to include in support of amphibious invasions, will have zero movement points remaining for the rest of their turn.

GAME PLAY NOTE

Given a week long turn, the inability of units to move after being air dropped may seem unrealistic. Basically they are taking a 10x10 mile area (hex) and waiting for troops to link up with them. Their importance is in cutting off enemy unit retreat routes and preventing reserve activations. You can always break them up into regiments if you want them to take more area on the turn of the drop, but this tactic should be weighed against the amount of resistance that is expected.

14.1.5. COMBAT DELAY MOVEMENT COSTS

Whenever ground combat takes place in a hex, there is a chance that a 'combat delay' will be generated for the hex which may slow down future movement from this hex during the current movement phase. This combat delay accumulates as described below with every battle in the hex, but total combat delay in a hex may never exceed nine points. This combat delay is listed at the bottom of the hex pop up and is displayed in the hex inside a small movement compass the same color as the non-phasing player. The graphic display can be toggled on or off using hotkey Ctrl-d. The effect of the delay is that when a unit moves out of a hex, it expends an amount of MPs equal to the combat delay if a non-motorized unit, and three times the combat delay if a motorized unit. As always it must have enough MPs to successfully complete the move or it is not allowed. All combat delays are zeroed out at the start of the next logistics phase. Combat delay points are added to a hex as follows:

- 3 Points - Deliberate attack with final odds < 5 to 1
- 2 Points - Deliberate attack with final odds >= 5 to 1 and < 10 to 1
- 1 Point - Deliberate attack with final odds >= 10 to 1
- 1 Point - Hasty attack with final odds < 10 to 1.

NOTE

This rule does not make it harder to enter a hex that was taken in combat, but does make it harder to move further than that hex during the current combat phase.

14.1.6. TACTICAL MOVEMENT POINT COST CHART

Terrain Costs	Motorized MP	Non-Motorized MP
Clear	1	1
City	1	1
Light Urban	1	1

Heavy Urban	1	1
Bocage	1	1
Light Woods	2	1
Heavy Woods	4	2
Rough	3	2
Desert	2	2
Sand	8	4
Tundra	3	2
Swamp (Ice level 4 or less)	6	2
Swamp (Ice level greater than 4)	4	2
Mountain (Mountain Infantry units pay 3 MPs)	40	10
Mountain Pass (Enter by and use rail hexes only)	4	4
Lake hex	Impassable	Impassable
Ferry (Note 4)	12	6
Costs for Attacking	Motorized MP	Non-Motorized MP
Hasty Attack	+3	+2 (7)
Deliberate Attack	+16	+6 (7)
Attack across an unfrozen minor river (in addition to applicable attack cost) (2)	+2/3 of EZOC MP Cost (3)	+2/3 of EZOC MP Cost (3)
Attack across an unfrozen major river(in addition to applicable attack cost) (2)	+2/3 of EZOC MP Cost(3)	+2/3 of EZOC MP Cost(3)
Combat Delay MP Cost (14.1.5)	+3/Delay Point	+1/Delay Point
Impact of Weather (Game Editor Generic Data)	Motorized MP (Road Condition Good/Ave/Poor)	Non-Motorized MP (Road Condition Good/Ave/Poor)
Light Mud	+1/+1/+1	-/+1/+1
Heavy Mud	+2/+4/+6	+1/+2/+3
Light Snow	-/+1/+1	-/+1/+1
Snow	+2/+2/+2	+1/+1/+1
Heavy Snow	+2/+3/+3	+2/+2/+2
Minor and Major River Hexside Movement (Note 2)	Motorized MP	Non-Motorized MP
Minor River Ice lvl 0-2 (No EZOC)	+2	+1
Minor River Ice lvl 0-2 (EZOC)	+6	+2
Minor River Ice Lvl 3-4 (No EZOC)	+3	+2
Minor River Ice Lvl 3-4 (EZOC)	+7	+3
Minor River Ice Lvl 5-10 (No EZOC) (Frozen) (2)	+0	+0
Minor River Ice Lvl 5-10 (No EZOC) (Frozen) (2)	+1	+0
Major River Ice lvl 0-2 (No EZOC)	+4	+2
Major River Ice lvl 0-2 (EZOC)	+18	+5
Major River Ice Lvl 3-4 (No EZOC)	+6	+4
Major River Ice Lvl 3-4 (EZOC)	+22	+9
Major River Ice Lvl 5-7 (No EZOC)	+8	+6
Major River Ice Lvl 7-7 (EZOC)	+26	+13

Major River Ice Lvl 8-10 (No EZOC) (Frozen)	+1	+0
Major River Ice Lvl 8-10 (EZOC) (Frozen)	+4	+1
Impassable River/Lake hex side(Note 1)	Impassable except when frozen (2) (6)	Impassable except when frozen (2) (6)
Full water hexes (2)	Impassable	Impassable
Impassable hex	Impassable except see (6)	Impassable except see (6)
Costs for enemy hexes and EZOC	Motorized MP	Non-Motorized MP
Leave enemy ZOC	+1	+1
Enter enemy hex	+((120-unit morale)/20)) (round down)	+((120-unit morale)/20)) (round down, subtract one from cost for cavalry units)
Enter enemy ZOC (only if already in enemy ZOC, i.e. ZOC to ZOC) (4)	+4 + same cost as for entering an enemy hex (This is in addition to the entering enemy hex charge that may also apply if entering a enemy hex)	+4 + same cost as for entering an enemy hex (This is in addition to the entering enemy hex charge that may also apply if entering a enemy hex)
Brigade/Regimental and Divisional Breakdown units entering enemy hex and when moving ZOC to ZOC	+1 in addition to normal costs	+1 in addition to normal costs
Temporary and Western Allies Motorized Infantry Units entering enemy hex	+1 in addition to normal costs	N/A
Air Interdiction per hex (17.3.3.1)	Motorized MP	Non-Motorized MP
1	-	-
2	+1	-
3	+1	-
4	+1	-
5	+2	-
6	+2	+1
7	+2	+1
8	+3 (8)	+1
9	+3 (8)	+1

Notes

(1) Supply may be traced through hex side when frozen (Ice level 8-10).

(2) Major and Minor Rivers as well as impassable River/Lake hexsides have much less effect on movement and no effect on combat when they are frozen. These hexsides are frozen when the ice level is 5 or greater for minor river hexsides and when the ice level is 8 or greater for Major River and impassable hexsides. There is never any ice in full water hexes (small lakes, large lakes, Baltic, Mediterranean, etc.) and they will never be frozen.

(3) The extra MP cost of attacking across a river is equal to 2/3 of the MP cost (truncated) for moving across a river (based on ice levels) into an EZOC. For example, a motorized unit pays 17 extra points when attacking over a major river when ice levels are 5-7, $26 \times \frac{2}{3} = 17$.

(4) Example: A ZOC to ZOC move by a Morale 83 unit moving to clear terrain is 7 if not entering an enemy hex (1 for clear + 1 for leaving a ZOC + 5 for moving ZOC to ZOC) If the unit was a cavalry unit it would be 6.

(5) Special Ferry Rules – Ferry Movement is allowed between two friendly hexes via a ferry hex, or from a friendly hex to an empty enemy controlled hex if there is a friendly amphibious HQ in the ferry hex. In this case the MP cost of the ferry is 12 for motorized and 6 for non-motorized units. The only time a unit may attack from a ferry hex is if the ferry hex contains a friendly amphibious HQ. In this case ground units may move from adjacent land hexes and stop on top of the amphibious HQ and attack an adjacent enemy land hex. Units that fail an attack from a ferry hex will retreat back to a land hex. Players may only move over ferry hexes that they control unless moving over an amphibious HQ.

(6) Impassable hexes outside of Africa can be crossed if both sides are friendly controlled, paying the same cost as if crossing a major river hexside.

(7) Non-motorized type 2 units pay only 5 MPs for a deliberate attack and 2 MP for a hasty attack (7.9).

(8) There is a +2 MP cap on the movement penalty per hex caused by air interdiction to motorized units moving in clear terrain.

14.2. STRATEGIC RAIL TRANSPORT

Strategic rail movement can be conducted by non-routed, non-frozen ground units. Each unit has a strategic transport cost in tons listed in the unit detail window. For that unit to use strategic rail movement there must be sufficient railyard capacity tonnage available to conduct the movement. The transportation cost of a unit will be deducted from the applicable railyard capacity every turn it uses strategic movement, even if it just moves one hex. Combat units that are attacked while entrained will suffer a significant degradation in CV in the subsequent battle. There is a cost in resources (coal) for using rail transport.

14.2.1. BASIC STRATEGIC RAIL TRANSPORT RULES

Strategic rail transport can only be conducted through friendly controlled and undamaged rail line hexes that are connected through the rail network to a permanent supply source. Rail line hexes that are in an enemy ZOC are considered to be cut off from the rail network and cannot be used for strategic rail transport, even if the hex is occupied by a friendly combat unit. The player can view the status of the rail line hexes and the rail network by toggling the Rail Damage Info button (hotkey r) in the map information tab. Friendly controlled and undamaged rail line hexes that are not connected to the rail network will display a symbol of a green circle with three white dots inside. Selecting a unit that is located on a rail line hex while in Rail Mode (F2) will shade all hexes that that unit cannot move into using strategic rail transport. Note that there is a movement point cost for both entraining and detraining, so that a unit that ends the turn entrained will need to at least expend the necessary SMP to detrain before it can use its remaining MP for tactical movement. See section 5.4.2 for details on using the interface to conduct strategic rail transport.

14.2.2. STRATEGIC MOVEMENT POINTS

All units have 200 Strategic Movement Points per turn, including Static units which can move by rail. When static units are mobilized they have 100 SMPs on the turn they are mobilized. Tactical MP and SMP are expended proportionally so that use of one movement mode will decrease the remaining allowance of the other. For example, a headquarters unit with a MP of 50 and a SMP of 200 expends 10 MP of tactical movement to move to a rail hex, resulting in a remaining allowance of 40 MP and 160 SMP. There is a variable SMP cost to load or unload from trains. Units without enough remaining SMP at the desired destination will be unable to detrain. Entrained units may not move via naval or amphibious movement. Each rail hex moved through costs a certain amount of SMP determined by the current rail line usage tonnage in that hex (14.2.4).

14.2.3. RAILYARD CAPACITY

Railyards represent rolling stock available for moving units and freight. Each undamaged railyard factory point, or level, produces 5k tons of rail capacity per turn with the exception that railyards located in the same hex as a national supply source (20.1.2) will produce 10k tons (double) of capacity per level per turn. Remaining railyard capacity will be displayed for each railyard when in rail move mode (F2) with the number in the rail circles on the map equal to 1000 tons of remaining load/unload capacity. For example, an undamaged level 2 railyard with 10k capacity (5 x 2) will show a value of 10 in the rail circle when in F2 mode. However, the same railyard in Berlin, a national supply source, would produce 20k capacity (10 x 2) and display a value of 20 in the rail circle. So a unit with a carry cost of 2000 tons would decrease the number in the railyard circle by 2 if it was in the same hex as the railyard when it started its rail move. There is no increase of railyard capacity tonnage used for units based on range, however, there is an increase in the SMP cost to move the unit as the system goes further to find sufficient railyard tonnage capacity. Note that for rail movement in the logistics phase of freight (either for production system or movement to depots), it does cost additional railyard tonnage as the system goes further to find available capacity at other railyards. It also costs additional railyard capacity as freight moves depending on the SMPs needed to complete the move.

There is a 50 hex limit to how far from a unit or freight location a railyard can be in order to use its railyard capacity for rail movement. In general, a unit or location separated from a railyard by ocean/sea hexes will not be able to draw on that railyard capacity. For example, units in France could not draw railyard capacity from railyards in the United Kingdom.

V1.00.44 – 9 June 2015

Formula Adjustment – the 50 hex range limit for using railyard capacity for movement is changed to a 30 hex limit. Note, the check has always been made from both the starting point and the ending point for a movement of freight or economic goods.

Railyard damage was not directly impacting the amount of freight that would be shipped and unloaded at a railyard depot in the hex. Now, there is a percentage chance equal to the railyard damage that the amount shipped to a railyard depot will be divided by 10.

Formula Adjustment - Made it easier to cause high amounts of damage to fuel, syn-fuel, and railyards.

14.2.4. RAIL LINE USAGE AND SMP PENALTIES

Rail line usage is determined by the freight and unit tonnage that has moved through the hex. As the rail line usage tonnage increases in a hex, strategic movement point penalties will apply. The maximum tonnage that is tracked in each hex is 30,000 tons, which also results in the maximum strategic movement point penalty, but as long as SMP and railyard capacity is available,

units can continue to use rail transport through a rail line hex.

During each logistics phase, accumulated friendly rail line usage in each hex is reduced to the higher of either current rail usage divided by six or enemy air interdiction value (actual shown in hex pop-up) times 500, with the latter being maxed out at 45,000 tons of rail line usage. In cases where there is no enemy air interdiction, at the start of the movement phase the max rail line usage will be 5000 tons. Note that rail line usage does have an impact on freight movement to depots during the logistics phase, so moving lots of units over a critical rail line will impact depots at the end of the line.

Rail usage in tons is displayed in the hex pop-up rollover text (5.2.1) for each rail hex. If the map information tab logistics info button (hotkey n) is toggled on, rail hexes are color coded based on tons of rail usage. Below are rail usage ranges with associated color codes and strategic movement point penalties per hex.

Bright green: 0 usage – No usage and no SMP penalty

Dark Green: 1 – 4999 tons – No SMP penalty

Yellow: 5000 – 9999 tons – +1 SMP penalty

Yellow: 10000 – 14999 tons – +2 SMP penalty

Orange: 15000 – 19999 tons – +3 SMP penalty

Orange: 20000 – 24999 tons – +4 SMP penalty

Orange: 25000 – 29999 tons – +5 SMP penalty

Red: 30000+ tons – +6 SMP penalty

14.2.5. RAIL TRANSPORT SMP COSTS

Entrain: The cost to entrain a unit is a minimum of 75 SMP. This cost can increase if railyard capacity has to be drawn from other hexes, with the further the distance the greater the increase in load cost (14.2.3). The cost to entrain a unit will be displayed in the general information and City/Airfield Box (5.1.5) in the third oval (Rail Load MP: xx) when a unit is selected in rail mode (F2).

Detrain: The SMP cost to detrain in a hex with a railyard is equal to 75 minus any remaining railyard capacity in that railyard. For example, a unit detraining in a hex with a level 2 railyard with 10k ton capacity left would translate to 75-10 or a 65 SMP unload cost. There is a minimum 30 SMP cost to detrain. The cost to detrain in a city or urban hex without a railyard is 80 SMP. The cost to detrain in any other hex without a railyard, including hexes with towns, is 100 SMP.

The cost to move 1 hex by rail is 1 SMP plus any rail usage SMP penalty, so the maximum cost to move through a hex would be 7 SMP (14.2.4).

14.2.6. IMPACT OF AIR POWER ON STRATEGIC RAIL TRANSPORT

Players can use ground attack and strategic bombing to attack railyards and lower overall railyard capacity. In addition, the further a unit has to go to find sufficient railyard capacity to use rail transport, the more SMP it takes to entrain, so bombing railyards can reduce overall capacity and increase the SMP cost of entraining units in specific areas. Air interdiction can be used to maximize the rail usage SMP penalty on specific areas of the rail network.

14.2.7. RAIL LINE REPAIR

Friendly rail line hexes must be undamaged in order to be used for strategic rail transport and the transport of freight. Rail line hex damage ranges from one to one hundred percent, but even one percent damage will prevent the hex from being usable for unit strategic rail movement and transport freight by rail. A change in hex control results in an automatic one hundred percent damage to that rail line. Rail line hexes can also be damaged by partisan attacks (18.3).

A player can view the status of the rail network by selecting the map information tab rail damage info button (5.1.2.1). The actual percentage of rail damage can be viewed in the particular hex pop-up rollover text.

Damaged rail line hexes can be repaired either automatically by special on-map construction type support units or manually by the player through the use of rail repair headquarters units.

14.2.7.1. AUTOMATIC RAIL LINE REPAIR

Repairs will be made during the logistics phase as headquarters units automatically detach construction and labor support units and send them to damaged rail line hexes. Unlike other support units, these units will appear on the map in the hexes they are repairing, and may not be moved by the player other than to send them back to their attached headquarters unit by selecting the construction or labor support battalion and then clicking the 'RETURN TO HQ' link in the unit bar. For human players only, there is a limit to the distance that the automated rail repair units will operate from the HQ unit that they are attached, which is based on command range (7.7.4). For example, if a construction battalion is assigned to a Corps HQ unit, it can only repair rail line hexes up to 5 hexes from that HQ, but the same construction battalion attached to a High Command HQ unit (e.g. OKW or SHAEF) could operate up to 90 hexes away.

Detached support units will generally only repair one damaged rail line hex per turn. Repair during poor ground weather conditions will proceed much slower. The automatic movements of these support units and the repairs they perform take place during the player's logistics phase. These support units will not move to hexes containing or adjacent to a friendly rail repair unit. They will also not move adjacent to an enemy unit.

Priority repairs take first priority over fixing rail hexes. Construction support units will go to priority repair locations first before going to fix rail hexes (21.2.4).

GAME PLAY TIP

For the most efficient use of detached construction and labor support units, they should only be manually returned to their headquarters unit if the player believes they are in danger of being attacked or isolated in their current position. The computer will return them to their headquarters unit when their rail repair work is completed on a particular section and then automatically send them back to another section that requires repair.

14.2.7.2. MANUAL RAIL LINE REPAIR

Players may also repair several hexes of rail line per turn, usually in the same section of rail line hexes, by manually using rail repair HQ units. Players must manually move rail repair HQ units and designate which hexes they will be repairing during a turn. In order for a rail repair HQ unit to use its special ability to repair rail hexes, the player must manually move the unit into a hex that is suitable for repair, and then select the RRC (Rail Repair Cost) text that will appear on the rail repair HQ unit in the unit bar if the unit has enough MPs to perform the repair. Selecting the RRC will set the damage of the hex to one percent, and this last point of damage will automatically be repaired during the player's next logistics phase. Designating a hex to be repaired expends movement points. The number next to the RRC indicates the MP cost to the rail repair HQ unit to repair the current hex. If the rail repair HQ unit is not in a location that it can conduct a rail repair operation, the RRC number will display a '-' instead.

14.2.7.3. REPAIR ELIGIBILITY AND RRV

Damaged rail hexes must be eligible to be designated for repair by a rail repair HQ unit. There is no limit on the number of hexes that can be repaired by a rail repair unit other than the MPs the unit has to expend. The hex to be repaired must be adjacent to another undamaged hex or hex that has been repaired during the current turn. This could allow the player to double up repairs and repair one track a long way in one turn. If a rail hex is not eligible for repair, the RRC will not display in the rail repair unit's info area.

If the Show Move preference (3.3.4) is toggled on, when a rail repair HQ unit is selected, all damaged rail hexes within the unit's movement range will be red, and all hexes already designated for repair within the rail repair HQ unit's movement range will be yellow.

NOTE

RRV is based on the number of construction and labor support units attached to the rail repair HQ unit and will decrease if attached support units are removed. Players can manually disband support units from a rail repair HQ unit, but there is no mechanism, automatic or manual, to transfer additional support units into a rail repair HQ unit.

15. GROUND COMBAT

Ground combat takes place in the action phase and is represented by combat units of the phasing side expending movement points to attack enemy units. The resulting battle can include air group units from both sides providing ground support or interception, the commitment of attached support units, and the commitment of nearby combat units in reserve status. The actual fighting takes place between the individual aircraft and ground elements attempting to fire and hit each other to disrupt, damage, or destroy. Terrain and fortification level, air interdiction levels, leader initiative and combat rating, unit morale, ground element experience and fatigue, ammo status, and the type of attack all play a role in the determination of the initial and modified Combat Value as well as how the battle is fought. At the conclusion of combat, the modified Combat Value ratio determines whether the defender holds or is forced to retreat, which may lead to rout, shattering or surrender, resulting in additional losses from retreat attrition. Depending on the odds ratio, defending units may have their movement points for their next turn reduced and combat delay may increase the movement cost of attacking units moving out of the battle hex.

15.1. COMBAT SEQUENCE

The following is a general outline of how a battle proceeds. Some steps, such as participation by air group units or commitment of combat units in reserve status, may not take place.

1. Initiate battle (see section 5.4.1 regarding use of movement mode (F1) to attack)
2. Determine fortification defense modifier from terrain and fortification level (15.3)
3. Commit support units (15.4)
4. Calculate Combat Values (CV) and odds ratio for reserve commitment (15.5)
5. Commit reserve units (Defender first, then Attacker) (15.5)
6. Calculate initial CV's and odds ratio (15.6.2)
7. Conduct battle
 - A. Air Mission sub-phase (17)
 - (1) Attacker interdiction in the defender's hex will cause damage/disruption to the defending units while defender interdiction in the attacker's hex(es) will cause damage/disruption to the attacker. Each unit in combat is impacted by the enemy interdiction in their hex.
 - (2) Both players' Air Group units committed for ground support [mission]
 - (3) Both players' Air Group units committed for air intercept of enemy Ground Support
 - (4) Air to Air combat
 - (5) Ground to Air (AA) and Air to Ground combat
 - B. Ground Combat sub-phase (15.6.1)
 8. Calculate final CV and odds ratio (15.9)
 9. Determine Winner and Loser (15.9)
 - A. If Defender lost, determine retreat result (15.10)
 - Could be retreat, rout and displacement move (15.11), shatter, or surrender
 - Retreat attrition (15.12)
 - B. If Attacker lost, determine retreat attrition on the attacking units (they are considered to be retreating back from the defender's hex).
10. Determine reduction in MP's for defending units for next turn.
11. Determine any Combat Delay movement costs to be added to the hex. (14.1.5)

15.2. TYPES OF ATTACKS

There are two types of attacks that are distinguished by the amount of time, represented by movement points (14.1.4), spent in preparation and the ability of the attacks to mass forces against the defender. Hasty attacks expend fewer movement points, but at a cost of reduced combat power. Deliberate attacks expend far more movement points, but allow the fullest application of force. Amphibious assaults (16.7) and Air Drop combat (15.7.2) are types of deliberate attack.

15.2.1. HASTY ATTACK

Defined as "...an attack in which preparation time is traded for speed in order to exploit an opportunity," hasty attacks will generally result in higher attacker and lower defender losses than a deliberate attack. A hasty attack will require the expenditure of three MP's for a motorized combat unit and two MP's for a non-motorized combat unit. Only a single stack of combat units can participate in a hasty attack and their Combat Value (CV) will be reduced by one half for all steps in which CV is calculated. Support units can only be committed from eligible headquarters units that have not expended any movement points during the current turn. Note that support units attached directly to combat units will always be committed to battles to which the combat unit is a participant.

15.2.1.1. RECONNAISSANCE IN FORCE

Prior to a hasty attack, a special modified CV calculation is conducted and an odds ratio generated. This calculation is not displayed in the combat resolution window and will most likely result in modified CV's and odds ratio that are different than the initial CV's displayed on the counters and in the combat resolution window (7.1). If this modified CV ratio is less or equal to 2 to 1 (2.01 to one is greater than 2 to 1), then an initiative check is conducted for each combat unit participating in the hasty attack. If all the units pass their leader initiative checks, then the attack is turned into a reconnaissance in force. If any unit in the attack fails the initiative check, then the attack remains a regular hasty attack. A reconnaissance in force will result in reduced fighting and losses on both sides and the attacker will have no chance to cause a retreat. This result will be reflected by the combat resolution message "Defending forces were scouted."

15.2.2. DELIBERATE ATTACK

Defined as "A type of offensive action characterized by pre-planned coordinated employment of firepower and manoeuvre to close with and destroy or capture the enemy," deliberate attacks require the expenditure of sixteen MP's by motorized units and six MP's by non-motorized units (5 by type (2) non-motorized units). Multiple stacks of combat units can participate in a deliberate attack against an adjacent defending stack. Unlike a hasty attack, support units can be committed from eligible headquarters units that have moved during the current turn. In addition, Artillery combat units that have sufficient movement points remaining may participate in a deliberate attack from two hexes away from the defending unit. The artillery combat unit must be selected just as any unit would be selected to add into a deliberate attack (5.4.1.3). If all units launching an attack are artillery combat units that are two hexes from the target hex, then only artillery units from both sides can fire and no support, reserve or air group units will be added into the battle for either side.

GAME PLAY NOTE

The artillery combat units are not actually firing from twenty miles away; the ability to add artillery combat units two hexes from the battle is an abstraction representing the massing of artillery for an intense pre-attack bombardment and the actual firing can take place at ranges as low as 1000 yards.

15.3.FORTIFICATION DEFENSIVE MODIFIER

The combat value of defending units can be increased by the fortification defense modifier, which is a combined value that takes into account both the intrinsic terrain and any man made fortification level in the hex. Terrain ranges from clear hexes, with no benefit, to heavy urban hexes, which provide a significant terrain benefit. In addition to the natural defensive value of the terrain in the hex, all hexes have a manmade fortification value, called a fort level, that ranges from Fort Level 0 (no benefit) to Fort Level 5 (maximum benefit). While most hexes have an initial Fort Level of 0 or 1 at best, some have a higher initial level indicating the presence of existing fortifications. The combat value of each defending unit is modified by multiplying the CV by one plus the total fortification defense modifier, which is the sum of the terrain modifier and the fort level. For example, a defending unit in a Light Urban hex (terrain modifier of six) with a fortification level of three would have its CV multiplied by ten (1+6+3) during combat. Combat units can increase the Fort Level of a hex by occupying the hex for successive turns. Each turn the hex is occupied there is a chance the Fort Level will increase, however; the higher the current fort level, the lower the chance of it increasing.

15.3.1. TERRAIN

Terrain can be thought of as possessing an intrinsic fortification level that is summed with the manmade fortification level to provide the total fortification defense modifier for that hex. The terrain type in a hex (6.2.1) also determines the average distance (range) for combat between ground elements. This is important for things like AFV versus infantry combat, as the closer ranges in urban hexes will allow infantry to do better versus AFVs. The following table summarized terrain fortification modifiers:

TERRAIN TYPE	DEFENSE MODIFIER	REMARKS
Clear	+0	
Bocage	+2	Dense (1)
Desert	+0	
Sand	+0	
Tundra	+0	
City	+2	
Light Urban	+6	+3 if Isolated Hex Double Dense (2)
Heavy Urban	+8	+4 if Isolated Hex Double Dense (2)
Light Woods	+1	
Heavy Woods	+2	Dense (1)
Rough	+3	Dense (1)
Mountain	+3	Double Dense (2)(3)
Swamp	+2	Dense (1)
Impassable	N/A	

Notes

(1) In dense terrain, the CV of infantry type ground elements is doubled and the CV of AFV and combat vehicle type ground elements are halved (15.6.2.3).

(2) In double dense terrain the CV of infantry type ground elements is quadrupled (x4) and the CV of AFV and combat vehicle type ground elements is quartered (x1/4) (15.6.2.3).

(3) Mountain and type 0 non-motorized combat units are more effective during battles that take place in a mountain hex (15.6.2.3).

15.3.2. FORTIFICATION LEVELS

Manmade fortifications and entrenchments are represented by a fort level in each hex that can range from zero to five. Though construction is automatic, there are specific conditions that must be met prior to construction of a specific fortification level. All defending units in a hex benefit from the fort level of the hex when in combat. The fort level of a hex is set to zero whenever the control of a hex changes sides. The fort level in a hex and any construction towards a higher fort level is displayed in the hex pop-up for each hex. A level zero on the map means a fort is under construction.

15.3.2.1. COMBAT UNIT FORT LEVEL CONSTRUCTION

For construction on a fort level to begin in a hex, there must be a combat unit in the hex. Depleted and/or frozen combat units cannot construct fort levels, security type units cannot build a fort level greater than one and isolated units are limited to building fortification levels no greater than two. Once a fort level is constructed, it will start to decay if the hex is not occupied by a combat unit. The chance that the fortification will decay increases as the fortification level decreases.

Each combat unit has a construction value (displayed on the left hand side of the unit detail window) that is the sum of the construction values for each of its ground elements. This value is affected by the fatigue and experience of the unit's ground elements. Construction values are also reduced based on the supply level of the unit. In no event will they be reduced below 20 percent of normal due to supply level. Any ground elements in the unit that are not engineer or construction types have their construction value divided by five when adjacent to an enemy unit. During the enemy player's logistics phase, units will use their construction value toward building a fort level. Units that moved during their turn construct fort levels during the next logistics phase with whatever percentage of their MPs that are left. For example, if a combat unit used 15 of its 45 MPs, it will only have two thirds of its normal construction value available during the enemy logistics phase for building fort levels.

It requires fifty construction points to build each fortification level, with one point representing two percent of the needed construction. The construction value of a unit is modified based on the current fortification level of the hex, the terrain of the hex, and the weather to determine the number of construction points it provides as follows (effects are cumulative):

Fortification level 0 - x 3

Fortification level 1 - x 1

Fortification level 2 - x .25

Fortification level 3 - x .05

Fortification level 4 - x .01

Swamp hex - x .25 (Maximum fortification level in a swamp hex is 3)

Light Mud/Light Snow - x .75

Snow - x .5

Heavy Mud/Heavy Snow - x .33

A unit in static mode has their construction value multiplied by 1.1.

A unit may never provide more than fifty construction points per turn (after modifications) to the construction of a hex. In addition, a single hex can only gain fifty net construction points of fortification level per turn. For example a hex that currently is at fortification level two with fifteen percent towards fortification level three constructed, would be limited to building up to no more than fortification level three with fifteen percent towards fortification level four.

Level 5 fortifications may continue to build up to 10 percent over level 5. This allows them to take some damage and still remain at Level 5.

Fortification build rates for building fortifications greater than 3 can be divided by 2 if a leader admin check fails.

Supply costs for fortification construction are as follows:

Fortification 0->1: 1 ton per fortification point (no cost for isolated units, construction rate is halved)

Fortification 1->2: 2 tons per fortification point (no cost for isolated units, construction rate is halved)

Fortification 2->3: 20 tons per fortification point

Fortification 3->4: 200 tons per fortification point

Fortification 4->5: 2000 tons per fortification point

Each fortification point represents two percent towards the next fortification level

15.3.2.2. LIMITS ON FORTIFICATION LEVELS

Requirement to build up to Fortification Level 5: Only will be built in hexes that have a fort unit and a port of at least size 4. Once built, the fort unit is not needed to keep the level 5 fortification. Not possible in a swamp hex.

Requirement to build up to Fortification Level 4: Must have a fort unit in the hex and the hex must either be City/Urban/Heavy Urban terrain or contain a port (of any size). Once built, the fort unit is not needed to keep the level 4 fortification. Not possible in swamp hex.

Requirement to build up to Fortification Level 3: Must either be 1) adjacent to an enemy hex, or 2) a City/Urban/Heavy Urban terrain hex, or 3) contain a port (of any size), or 4) contain a fortified zone unit in the hex. Once the level 3 is reached, the condition does not have to continue to be met to keep the level 3 fortification.

Requirement to build up to Fortification Level 2: Must be a coastal hex (hex adjacent to a major sea, not just a lake).

Requirement to build up to Fortification Level 1: Must be within 20 hexes of an enemy unit.

If a hex meets the requirement to build to a given level, it need not meet the requirements of the lower levels in order to build to the lower level (i.e. a hex that qualifies to be built to level 3 only needs to meet the Level 3 requirements in order to build to

level 1, 2 or 3).

Fortification levels that have reached their maximum fortification level for the hex may continue to build up to 10 percent towards the next fortification level.

15.3.2.3. FORTIFICATION DECAY

Once a fortification level is constructed, it will start to decay if the hex is not occupied by a combat unit. The chance that the fortification will decay increases as the fortification level decreases.

Level 4 and 5 fortification levels and fortification levels on coastal hexes do not decay.

There is no fortification decay on turn 1 of any scenario.

Decay for level 0-2 fortifications is impacted by additional percentage of decay due to weather conditions as follows:

	GROUND WEATHER AND ADDED DECAY		
Fortification Level	Clear	Light Mud/Light Snow/Snow	Heavy Mud/Heavy Snow
0	20%	40%	80%
1	12%	14%	48%
2	4%	8%	16%

15.3.2.4. SUPPORT UNIT ASSIST TO FORT LEVEL CONSTRUCTION

Construction and engineer support units attached to headquarters units in the combat unit's chain of command can assist those combat units in constructing fort levels if the applicable headquarters unit passes a leader admin check. Units can draw help from support units in any HQ up the chain of command, out to a range of 20 hexes for High Command HQs, 15 hexes for Army Group HQs, 10 hexes for Army HQs and 5 hexes for Corps HQs. Each eligible support unit may assist the fort level building of no more than one combat unit per turn.

15.3.2.5. CIVILIAN POPULATION ASSIST TO FORT LEVEL CONSTRUCTION (AXIS ONLY)

Axis controlled town, city and urban hexes can use their population as civilian labor to help construct fortification levels within up to 8 hexes if a supplied enemy unit is within 25 hexes. The town hex must have a population of at least two. Civilian labor can only assist the construction of fortification levels in hexes with combat units where the construction of fortification levels has already begun. For Axis town, city, or urban hexes that are not German or Italian nationality, a combat unit must be present in the town, city or urban hex as well as any other hexes where fortification levels are being constructed. Each eligible town, city or urban hex will calculate a City Labor Value (CLV) based on the population of the hex divided by eight (divided by twelve if not German or Italian nationality), rounded down. In either case, the CLV can never exceed eight. The town, city or urban hex will form labor teams with a construction value equal to the CLV times five, with a minimum construction value of five (for German and Italian nationality cities, the CLV is multiplied by twenty and the minimum value is 20). The maximum number of labor teams that may be formed is equal to the CLV of the city, with a minimum of at least one team, and only 1 team may be sent to any given hex. These teams may help in fortification level construction in hexes that are within the CLV number of hexes from the town, city or urban hex. The hexes nearest to enemy units will tend to get the help first. The construction value of the labor team is modified in the same way as combat and support units are modified by fortification level, terrain and weather to determine the net construction points provided to a hex they are assisting. In addition, if there are no enemy units within twelve hexes of the city, the construction value of each team is divided by four. A hex may receive labor teams from more than one town, city or urban hex per turn. The population may become damaged from participating in fortification level construction.

For example, Cologne with a German population of 31 has a CLV of 3 (31/8 rounded down). This means Cologne will send out labor teams to hexes up to 3 hexes away from the city hex as soon as there is an enemy unit within 25 hexes. Each team will have a basic construction value of 60 (3x20). Up to 3 different hexes may receive help per turn from a Cologne labor team. If no enemy unit was within 12 hexes of Cologne (but there was an enemy unit within 25 hexes), each labor team would have a construction value of 15 (60/4).

City labor may also continue to build up the fortification level of an unoccupied hex as long as the hex has some construction already underway, however, fortification level decay may more than offset any additional fortification construction done by the city labor.

15.3.2.6. FORT LEVEL REDUCTION IN COMBAT

Fort levels can be reduced during combat if the attacking force contains engineer ground elements (e.g. German Pioneer, American Combat Engineer; any type Engineer or Mech-Engineer ground elements) participating in the battle. This reduction can be fractional, i.e. it doesn't have to reduce a fort by one entire level, and it can just reduce a part of one level. Fractional reductions in fort levels take place in two percent increments. The more engineer ground elements participating, the better the chance for fort level reduction. Engineer values are divided by the fort level when calculating their ability to reduce fort levels in combat. The chance of reducing fort levels is far greater in a deliberate attack, as engineer values are divided by four during a hasty attack and are reduced to zero if the hasty attack is changed to a scouting attack. Fort level reduction caused by engineers can result in the reduction of the final defending modified combat value (15.9). In addition, if the attacking force is unable to

force a retreat on the defender, but has a combat value ratio between 1:1 and 1:1.99, there is a chance that the defending fort level will be reduced up to one additional level, with fractional reductions once again possible. This additional one fort level reduction does not require engineer ground elements to occur, but the presence of engineers will increase the chances. If all defending units are forced to retreat, then any fort levels in the hex are reduced to zero.

Artillery (especially Heavy Artillery) can also cause small fort reductions during combat.

V1.01.37 – 25 May 2016

Manual correction/clarification (section 15.3.2.6) – Forts can be reduced during combat in these ways:

- a) From artillery fire during fire combat, with heavy artillery weapons causing the greatest reduction. These reductions are generally small fractional reductions.
- b) If the attack was not halted, the full engineer value is applied prior to the odds calculation and may reduce the fort levels.
- c) Once the final combat odds and intensity level of the combat is calculated (defined by the unit size of the attacking force where a division equals 9 points), forts may be destroyed if;
 - i. Odds are ≥ 1.5 or combat intensity is > 30 - automatic 50 point fort reduction (one full fort level reduction) and possibility of additional fort reduction based on the engineer value similar to part b) above but with the AE value divided by 2.
 - ii. Odds are ≥ 1 and < 1.5 or combat intensity is higher than 15 - 1/4 of engineer value attempts to reduce forts as in b) above.
- d) Minesweeper and MSW Tanks count as two engineer squads for purposes of determining the engineering value.
- e) This sentence in the original manual is void: In addition, if the attacking force is unable to force a retreat on the defender, but has a combat value ratio between 1:1 and 1:1.99, there is a chance that the defending fort level will be reduced up to one additional level, with fractional reductions once again possible.

15.3.2.7. FORT LEVEL AND AFV DAMAGE

There is a small chance that attacking AFV ground elements may become damaged during combat by mines. The probability of damage increases with the fort level, representing the higher density of minefields.

15.3.2.8. ARTILLERY AND FORT LEVELS

To better simulate the ability to pre-register fire locations, the effectiveness of the Defender's artillery fire is related to the fort level of the hex containing the firing artillery. The higher the fort level, the more effective artillery in that hex will be in combat. Due to their ability to participate in multiple battles, artillery support units attached to headquarters units do not receive any benefit from fort levels when committed to combat, so this benefit is limited to artillery combat units as well as artillery support units directly attached to fortified units (7.5.2).

15.4. SUPPORT UNITS IN COMBAT

Support units can participate in combat as part of the attacking or defending side. Support units that are directly attached to combat units will automatically be added to the battle. Support units attached to headquarters units must pass a series of checks in order to be committed to a battle. Headquarters units can only commit support units to attached combat units. The HQ unit must be within five hexes of attached combat units and be able to trace an indeterminate path of friendly hexes, which can be in EZOC, to those same combat units in order to commit support units during combat. Note that the actual distance through friendly hexes from a HQ unit to an attached combat unit does not impact the ability to commit support units, as long as the HQ unit is within five hexes "as the crow flies". Support units committed to support a cross river attack will be subject to additional disruption (15.6.4).

15.4.1. SUPPORT UNIT COMMITMENT

The maximum number of attached support units that can be committed by headquarters units to a single battle is 6, with the exception where the defending combat units are in a light urban or heavy urban hex, where the maximum is 18. Support unit commitment from headquarters units is not automatic. For each support unit attempting to be committed, the leader of that headquarters must pass an initiative check. The support unit must then pass several checks, with the checks becoming more difficult based both on the number of support units already committed and the total number of non-construction support units attached to the headquarters unit. This means that Headquarters units with large numbers of non-construction support units will have more opportunities to commit support units; however the overall probability of each support unit being committed will be less than if the headquarters units had fewer non-construction support units. HQ units that have not moved during the current player-turn have an increased chance of committing support units to battle. The chance of support units being committed can also be increased by the level of fortification in the defending hex. Support units directly attached to eligible combat units will be automatically committed to a battle involving that combat unit and do not count against the HQ unit maximums discussed above and below. Note that the only combat units that artillery support units can be directly attached are fortified zone units (7.5.2).

15.4.2. WESTERN ALLIED ARTILLERY COORDINATION

US HQ units can provide up to an additional 6 artillery support units over the normal support limits. British and Canadian HQ units can provide up to an additional 4 artillery support units over the normal support limits. In addition, these nationalities have a greater chance that their artillery support units will be committed into a battle.

15.4.3. DEFENDER ARTILLERY SPECIAL COMMITMENT

Artillery support units attached to a defending HQ unit have priority to be committed into a battle during a special commitment phase. During this round of commitments, defending HQ units have a chance of committing 3 more than the normal limit of committed HQ units (so 9 or 21 instead of 6 or 18). After this round, the normal commitment round is conducted. Western Allied artillery coordination (15.4.2) is cumulative with this special commitment, further increasing the number of artillery support units that could be committed by US, British or Canadian defending HQ units.

15.5. RESERVE COMBAT UNITS

Combat units in reserve mode may be committed to a nearby battle, both offensively and defensively. The type of attack itself, whether hasty or deliberate, has no effect on the commitment of units in reserve mode. Any Ready combat unit with at least 3 MPs may be placed into Reserve mode by selecting the Ready/Refit/Reserve toggle on the combat unit detail window (26.3.14) until Reserve is displayed. Units that move, retreat or rout are taken out of reserve mode.

Reserve units that are committed to combat do not move, but they must have the MPs required to be expended in order to commit to the battle. The MPs a unit has when it ends its player turn are the MPs available for it to use for commitment as a defensive reserve during the enemy player's turn. Reserve units committed to support a cross river attack will be subject to additional disruption (15.6.4).

During a battle all defensive reserve commitments are made first, and then followed by offensive reserve commitments.

15.5.1. RESERVE UNIT COMMITMENT

To be committed in defense, a unit in reserve mode must be within 6 hexes of the battle hex. To be committed to an attack, a reserve unit must be within 3 hexes of the battle hex. A unit in reserve mode may never commit to a battle if it is adjacent to an enemy unit. A unit in reserve mode will never commit into a battle if the initial combat value (CV) odds ratio at the time the unit checks are over 10 to 1. A defending reserve unit will also never commit into a battle if the odds are less than 1 to 4. Axis units next to enemy amphibious HQ units are not eligible to come in to a battle from reserve. If the above commitment pre-requisites are met, the unit must then check to see if it has enough MPs to commit to the battle (15.5.2). If it does, then the unit must pass a leader initiative roll to be committed to the battle. The unit must also pass a check based on the MPs to be expended such that Die (MPs to be expended if committed) must be less than or equal to Die (Units MPs). In addition, the lower the command battle modifier, the higher the chance the unit will be committed from reserve, especially those units with a command modifier below 10 percent (15.6.2.2).

A unit may participate in multiple battles in the same turn as long as it meets all of the requirements and has the MPs to expend. Defending units in reserve mode that participate in a battle that is lost have their MPs reduced to zero, so will be unable to participate in any other battles that turn. All reserve combat units committed will suffer a reduction in their combat value if they have a vehicle shortage.

V1.00.07 – 19 December 2014

Rule Change - Reserve units may not trace a path to a battle over a ferry hex (may not commit if separated by a ferry hex).

15.5.1.1. RESERVE COMMITMENT LIMITATIONS DUE TO UNIT SIZE

Corps sized combat units are less likely to be committed offensively as they add one to the leader initiative roll. Brigades and Regiments are more likely to be committed as they subtract one from the leader initiative roll. In addition, as units in reserve mode from one side are committed to a battle, the chance of further commitments to the battle decline, based on the size of the combat units that have already been committed.

15.5.1.2. RESERVE COMMITMENT MP REQUIREMENT

To determine the MPs required for commitment, a unit in reserve mode traces a movement path to the battle hex if defending, or to the closest hex containing an attacking unit if attacking. The MPs to this hex are modified based on the units involved in the combat. If the combat unit in the battle that is attached to the same HQ unit as the unit in reserve mode, the MP costs to the battle are multiplied by three. Failing that, if there is a combat unit attached to an HQ unit that is one level removed from the reserve mode unit's HQ unit (reports to same army HQ unit but not same corps HQ unit or attached to an Army HQ unit while unit in reserve mode is attached to a corps HQ unit that is in turn attached to the same army HQ unit) then the MP cost is multiplied by 4. In addition to the cost to reach the hex, the unit must pay an additional 8 MPs if it is a motorized unit or 2 MPs if it is a non-motorized unit. For example, a motorized unit in reserve mode that is located 4 movement points from a defending combat unit, with both units being attached to the same corps HQ unit, will require and expend 20 MP if it is committed to the battle as $(4MP \times 3) + 8 = 20$.

15.5.2. DEFENSIVE RESERVE UNIT SPECIAL RULES

Defending units committed from reserve may rout if the battle result forces the defender to retreat from the combat. Defending units committed from reserve will not be eligible to rout if they pass a check where their Morale is greater than or equal to $40 + \text{Die}$ (15). This means that if their morale is 55 or greater they will never rout from a reserve commitment, but if their morale is 40 or lower they always will always be eligible to rout. The computer will never put a unit with morale less than 50 in reserve mode.

Defending reserves are considered counter-attacking forces and normally do not get the benefit of fortification levels in combat, though they do benefit from all terrain modifiers that are valid for the hex being attacked. The exception is that reserves committed in defense to fighting in urban hexes will receive the full defensive fortification modifier of both the terrain and fortification levels in the hex.

15.5.2.1. DEFENSIVE RESERVE UNITS COMMITMENT TO CITY AND URBAN HEXES

There are special rules regarding defending unit's ability to react from reserve into a battle in a city, light urban or heavy urban hex. Any reserve unit within 2 hexes of a battle in a city or urban hex that can trace its way to the hex and has at least one movement point remaining may be committed from reserve even if the number of MPs to reach the battle exceed the number the unit has remaining. The unit is also exempt from the normal distance check. If the unit commits to the battle, it will expend the normal cost to commit from reserve, but if it is more than the remaining MPs of the unit, the unit will be reduced to zero MPs. Units can never be adjacent to an enemy unit to react in from reserve and must still pass a leader initiative roll to be committed. In addition, the normal Die (18) die roll used to compare against number of units committed is changed to Die (36) for light-urban and Die (72) for heavy-urban (instead of Die (18)).

15.6. GENERAL GROUND COMBAT RULES

15.6.1. DESCRIPTION OF GROUND COMBAT

Ground combat is conducted by an automated tactical combat system that consists of a variable number of rounds where ground elements engage each other. In general, the computer first determines the opening range at which combat will take place. This is largely based on defending terrain, with battles in city and urban hexes commencing at shorter initial ranges. The attacker fires first at ranges of 3000 yards or greater, while the defender fires first at ranges less than 3000 yards.

The next step is to determine which ground elements will be able to fire. There are multiple factors involved, to include the type of attack (hasty or deliberate), enemy unit detection level (DL), defending fortification modifier, attacking unit morale and supply status (especially ammo), individual ground element experience, fatigue, ammo usage and range of their equipped devices, and leader initiative and ground combat rating (mech or infantry) checks (11.3). In addition, Anti-aircraft guns in the attacker's units will not fire 75 percent of the time. Ground elements that have successfully passed their checks will then fire their equipped devices that are within range at an opposing ground element. The number of shots taken, the ability to hit the target, and for AFV and combat vehicles where the target is hit, are dependent on the same factors listed above as well as ground element speed, size, and the firing devices accuracy, rate of fire, and blast radius against soft targets.

The amount of ammo on hand impacts the number of shots taken in combat. If over 100 percent, the combat unit may get an extra shot. If less than 50 percent, the combat unit will likely get fewer shots, Longer range artillery units will fire less often if ammo is under 75 percent. Artillery in support units will tend to fire more often, depending somewhat on ammo on hand. Artillery ground elements in support units and on-map artillery combat units will be more willing to use up ammo when they are in a battle than artillery ground elements in other combat units, because the support units and on-map units are less likely to be in additional battles while a non-artillery combat unit must retain ammo for other possible battles in the turn. The size of the attacking force will also impact the number of shots taken in combat (15.6.1.1, 20.7.1).

If the targeted ground element is hit, then the result is determined based on the defending fortification modifier, the defending ground elements speed and armour, and the attacking ground element's device lethality and penetration capability. The result could be no effect, disrupted, damaged or destroyed. AFV ground elements may become damaged during combat due to breakdowns or mines (9.6.1, 15.3.2.5). Any result other than no effect removes the targeted ground element from further participation, to include contributing to the overall combat value, in the current battle; however, disrupted and damaged ground elements may suffer additional effects depending on which side wins the battle.

Generally, the range at which firing takes place will decrease for the ground elements such as infantry squads as they manoeuvre to come to grips with the defending ground elements, though indirect fire and longer range direct fire ground elements may continue to fire at longer range. After all engagements between ground elements are complete, the computer will move on to the next step of determining the winner of the battle.

V1.00.37 – 7 May 2015

New Rule - When the defending force is less than 1 regiment (1 or 2 battalions), the battle is never stopped due to poor odds (i.e. the range will close to minimum range in every battle). The Torch expansion will have some on map battalion sized units.

15.6.1.1. ATTACKER FORCE SIZE FIRE PENALTY

There is a fire penalty in combat when there is a large number of attacking units. The force value of the attacking side is calculated using the following values for each non-support, non-artillery division unit attacking:

Corps 15

Division 9

Brigade 5 (3 if the brigade has less than 2000 men)

Regiment 3

Once the force value exceeds 28 there is a chance that elements will not get to fire during combat. Artillery elements are much less effected (only impacted at closer ranges in combat), and the chance that elements will not fire increases as the force value increases. In

general though, adding more units should result in more elements firing, but a lower percentage of the total elements will generally be firing as the force increases. The CV values of the attacking units are not changed by this rule.

15.6.2. COMBAT VALUE (CV) AND GROUND COMBAT

Unit Combat Values (CV) are subject to numerous modifiers detailed below. To assist in determining the impact a CV predictor is available that appears in the hex pop up (5.21) when the normal or hasty attack symbol appears on the map (indicating an attack can be conducted in the hex). This predictor provides the adjusted CV values of the units that accounts for all known factors (terrain, forts, dense modifiers, weather, etc.) with the exception of leader values. This value is fogged up for the enemy if FOW is on. This is a very important tool as it's the only way for the attacker to know how their unit's CVs are going to be impacted by the terrain in the hex being attacked.

15.6.2.1. VEHICLE SHORTAGE CV MODIFIER

All attacking and defending units suffer a reduction in CV if they have a vehicle shortage. This penalty is a percentage reduction equal to $((1 - (\text{vehicles}/\text{vehicle need})) \times 20)$. The reduction is multiplied by 2.5 if the unit is motorized. For example, a motorized unit with no vehicles would suffer a 50 percent reduction in CV, while a 40 percent shortage in vehicles would cause a 20 percent reduction in CV.

15.6.2.2. COMMAND BATTLE CV MODIFIER

In order to simulate both the difficulty of coordinating attacks with units from different organizations and the ability of an attacking force to exploit the boundaries between different defending commands, the command and control organization, i.e. attachment, of the combat units participating in a battle can negatively affect the overall CV of both the attacker and the defender.

For each combat, each side will have a commanding HQ unit. Generally this commanding HQ unit is selected because it has units with the most Combat Value (CV) directly attached to it in the battle. Units not attached directly to the commanding HQ unit will suffer command battle modifiers that will reduce their CV for the battle. The battle report lists the units in the battle grouped under the name of the HQ to which they are attached. If an HQ's units are suffering a command battle modifier, the amount of the CV reduction is shown next to the name of the HQ unit. For example, 'XXIV Panzer Corps - 36%' indicates that each unit listed in this corps has had its CV reduced by 36 percent. The greater the number of HQ units that the unit must trace through to reach the commanding HQ unit, the greater the modifier. In addition, units that are attached directly to a high command (type 1) HQ unit suffer an additional 20 percent modifier, and those that are attached directly to an Army Group suffer an additional 10 percent modifier (these are shown as part of the total modifier percentage displayed).

15.6.2.3. TERRAIN CV MODIFIER

The CV values (26.1.4) of certain types of elements are modified in certain types of close terrain designated as dense and double dense. Dense terrain is Swamp, Heavy Forest, Rough, and Bocage. Infantry type elements are doubled and AFV and combat vehicle type elements are halved in dense terrain.

Double dense terrain is Mountain, Light Urban, and Heavy Urban. Infantry type elements are quadrupled (x4) and AFV and combat vehicle type elements are quartered (/4) in double dense terrain.

Mountain units have their CV doubled in battles fought in mountain hexes, no matter what the weather. There is also a 1.25 multiplier for CV values of non-mountain units that are Motorized type 0 (no vehicles) for battles fought in a mountain hex (7.9).

Units defending in Heavy or Light Urban terrain receive a doubling of their Combat Value when determining the winner and loser of the battle. This doubling is in addition to all other modifiers.

15.6.2.4. WEATHER CV MODIFIER

Attacking CV values are reduced by the ground weather in their hexes (22.4.1). The exact modifiers are based on the specific ground weather and road system in the attacking unit's hex and the specific attack CV adjustment can be located in the editor under the nat/weather tab, weather effects item. The hex pop up CV combat predictor (5.2.1) includes the weather CV modifier. The following table shows the weather CV modifier from the Editor Generic Data.

Weather in Attacking Units Hex	WEATHER ATTACK CV ADJUSTMENT		
	Good Road System	Average Road System	Poor Road System
Light Mud	.90	.80	.75
Heavy Mud	.50	.25	.125
Light Snow	-	-	-
Snow (1)	.90	.80	.75
Heavy Snow (1)	.90	.80	.75

Note

(1) Ski units will have their combat value (CV) doubled in snow hexes and tripled in heavy snow hexes and are not affected by the

above weather CV modifiers for snow and heavy snow.

15.6.2.5. AMMUNITION AND FUEL IMPACT ON CV VALUES

All units with less than 100 percent of their ammunition needs, and motorized units with less than 50 percent of their fuel needs will suffer a reduction in CV (not to exceed a 50 percent reduction in total from these two modifiers). First a unit loses 1 percent for each 1 percent they are short of their ammunition needs. Next motorized units lose 2 percent for each 1 percent they are short of 50 percent of their fuel needs. A unit cannot lose more than 50 percent of their CV value due to the combined effects of these modifiers. Example 1: a motorized unit with 90 percent of ammo needs and 40 percent of fuel needs would have its CV multiplied by .9 and then .8 (or .72, thus losing 28 percent of its CV value). Example 2: The same unit but with 90 percent of ammo and 25 percent of fuel needs would have its CV multiplied by .5 as .9 times .5 is less than .5 which is the maximum combined penalty. These CV reductions are accounted for in the printed on-map CV values.

15.6.2.6. INITIAL CV VALUES

At the start of the battle, the combat resolution window will display each participating combat and support unit along with its CV in parentheses as well as an overall combat value at the bottom of each side's section. These initial CV's are essentially the CV displayed on the on-map combat unit counters multiplied by ten. The only modifiers applied to the initial CV's are the fortification defensive modifier and the halving of attacking unit CV's if the attack is hasty. The combat values of the individual units may not add up to the total CV because the total accounts for any loss of CV due to the command battle modifier, while the individual unit value does not. Note that the displayed CV's, both on the counters and in the combat resolution window, reflect disruption caused by any cross river attack (15.6.4).

The final overall combat values displayed at the bottom of the screen at the end of the battle may not bear any resemblance to the CV's on the counters as they not only reflect losses suffered during the battle, but have been heavily modified due to numerous random factors (15.9).

15.6.3. UNREADY COMBAT UNITS ATTACK RESTRICTIONS

Combat units that have the sum of their current morale and actual TOE percentage equalling less than 90 are in an unready status, which is reflected in the unit bar when the unit is selected. Unready combat units may only attack if they have not expended any movement points during the turn. With the exception of unready artillery combat units firing at a distance of two hexes, this means unready combat units must start their turn adjacent to an enemy unit in order to be eligible to attack. Unready combat units have their attack CV reduced by 50 percent.

15.6.4. CROSS RIVER ATTACK

Combat units attacking into a hex through a non-frozen (ice level four or less for minor rivers and ice level 7 or less for major rivers) minor or major river hex sides are required to expend additional movement points above the normal attack MP cost. All ground elements that cross the river to attack are subject to a disruption check prior to the initial computation of combat value. Ground elements with longer range indirect fire devices will normally not check for disruption while infantry and combat engineers most likely will check. Infantry type ground elements will tend to suffer approximately the same amount of disruption for both minor and major rivers, but AFV and combat vehicle ground elements will suffer more disruption in crossing a major river than a minor river. Since disrupted combat units do not contribute to overall CV, players can anticipate a reduction in overall CV of up to half for minor rivers and up to two-thirds for major rivers prior to any other modifications.

15.7. AIRBORNE DROP ATTRITION AND COMBAT

Airborne units conducting an air drop (17.3.9) will undergo a series of checks to determine attrition losses. These checks are based on the type of terrain in the drop hex, the number of preparation points the unit had accumulated prior to the drop, presence of other units, proximity to an amphibious invasion hex, the experience of the unit and whether the drop is at night or in bad weather. If the drop hex contains enemy units, a special deliberate attack combat will take place. In addition, an airborne landing will increase air interdiction in the drop hex and adjacent hexes.

V1.00.00 – 21 November 2014

a. Airdrop scatter - Airborne brigade and regiment size units that are dropped have a 2/3 chance of scattering 1 hex. If they scatter into a water hex they are destroyed. No more than one airborne unit will scatter onto any given invasion beach (i.e. scattering airborne will not stop a two unit invasion from coming ashore). There will be a flak combat report in the original drop hex, and then a drop combat report in the hex the unit scatters to. 15.7

b. Airdrop fatigue - Broken down divisions and broken down regiments (1/ 2/ 3/ units) will suffer 50 additional fatigue when airdropped. Independent regiments and brigades will suffer 25 additional fatigue when dropping (if not broken down into 3 parts). Unified Divisions will not suffer additional fatigue when dropping.

V1.00.07 – 19 December 2014

AI – Improvements were made in Allied late war offensive AI and German AI reactions to airborne drops in Sicily.

15.7.1. AIR DROP ATTRITION

First the unit may have elements damaged or destroyed due to losses to the air transports while enroute to the drop target hex. Next, there is a chance an element not yet damaged will be damaged during the drop based on the terrain in the target hex. The relative damage caused by each terrain type is as follows:

Clear and Desert: 1

Sand: 2

Bocage: 3

Tundra: 5

Light Woods: 10

Rough: 20

Swamp and Forest: 25

City: 40

Light Urban: 50

Heavy Urban: 60

It is quite possible to see units taking percentage damage due to the terrain equal to roughly one half of the relative number. So landing in rough could lead to 10 percent of the dropping units being damaged just from the terrain (plus or minus a sizable amount).

In addition, elements that are not yet damaged may be damaged based on the unit's number of prep points if $\text{rnd}(200) < (100 - \text{prep points})$.

Finally, once units end up in their final hex (either ending up in the drop hex or after a retreat if they lose a battle in the drop hex), any undamaged elements at this point must conduct an additional attrition check. First the following is added for each target hex or adjacent hex to the drop to arrive at an attrition value (AV):

+15 if water hex or enemy unit (of any kind) in hex (+6 if hex is adjacent hex)

If not item 1, then +10 if the hex is the target of an invasion (+4 if hex is adjacent hex)

If not 1 or 2, then +5 if there is a friendly unit in the hex (+2 if hex is adjacent hex)

For each element in the airborne unit, a check is done and if $\text{rnd}(200 + \text{experience of unit}) < \text{AV}$ the element is damaged.

There will be extra attrition to air drops at night and during bad weather. At night, if $\text{rnd}(10) > \text{rnd}(\text{pilot skill which is experience modified by fatigue})$ then ground elements being transported by that aircraft will be damaged. Weather based attrition will occur to ground elements if $\text{rnd}(100) < \text{weather effect} * 5$ where clear=0, rain=1, heavy rain=2, cold=3, snowfall=4, blizzard=5.

15.7.2. AIR DROP COMBAT

When an airborne unit is dropped on a hex with enemy units, a special form of deliberate attack is resolved. In this combat the defending terrain is not considered for determining the combat value (CV) of the defending units. Also, the defending units have their CVs divided by 3 to simulate surprise. If the defending units lose the battle they will be retreated and the attacking units may land in the hex or scatter to an adjacent unoccupied hex. If the defender holds, then the airborne unit will scatter to an adjacent unoccupied hex. If forced to retreat and there is no empty hex to retreat to, the airborne unit will be destroyed. If the defending hex is a city, urban or heavy urban hex, or if it contains a fort level greater than 3, or if the hex is the target of an amphibious invasion, then the chance the defending unit will retreat is greatly reduced. Airdrops on HQ units may result in the attacking airborne unit being forced to retreat. In this case, a normal battle with casualties is not fought, but there is an odds calculation and retreat losses.

V1.00.00 – 21 November 2014

Airdrop combat - Airborne drops into an empty hex may be engaged by nearby units in reserve mode. After the combat, if the airborne is a brigade or regiment size unit and it has lost the combat, it will be destroyed. If it is a division it will still land and take control of the hex after the combat. An airborne brigade or regiment size unit that loses a battle caused by an airdrop is destroyed. Divisions will attempt to retreat to an adjacent hex (or the same hex if only engaged by reserve units from outside the drop hex). Note that an airborne unit can lose a battle to airfield ground crew, flak attached to a city and HQ units, and currently when this happens no units will appear listed for the defender in the combat report.

15.7.3. AIR DROP SPECIAL AIR INTERDICTION

Airborne units automatically create 33 air interdiction points in their drop hex and every hex adjacent when they drop (17.3.3). If this causes the amount of air interdiction to exceed 99 in a hex, it will be capped at 99. This additional air interdiction abstractly represents confusion caused by airborne landings and the impact of paratroopers scattering into other hexes during the drop.

V1.00.00 – 21 November 2014

Airdrop interdiction - Interdiction created by airborne regiments and brigades is only 8 points per hex (instead of 33 for divisions).

15.8.COMBAT RESULTS AND BATTLE LOSSES

15.8.1. COMBAT RESULT EFFECTS

Disruption: Disrupted ground elements can no longer fire and they will not contribute their combat value to any future overall CV computations.

Damage: Damaged ground elements are out of action and can no longer fire or be fired at. They no longer contribute to a unit's CV, but can be destroyed or lose their devices as a result of the determination of which side won or lost the battle.

Destruction: Destroyed ground elements are eliminated immediately, though men and devices may be captured and there is a ten percent chance that the manpower associated with that ground element will be disabled instead of being killed in action. Approximately 1 in every 25 men from destroyed elements will be captured as a result of combat.

Generic Vehicles: Generic organic unit vehicles can be damaged or destroyed as a result of combat.

15.8.2. BATTLE LOSSES

Battle losses are reflected in the Combat Resolution Display (26.3.12) and the Show Losses Screen (26.3.2). Note that in the show losses screen there is a difference between the "Recent Battle and Non-Combat Casualties" column and the other columns. The former includes all casualties (wounded/sick/damaged weapons and vehicles) and takes into account ready ground elements that have become damaged as well as damaged ground elements that have been destroyed by listing half of their manpower, guns and AFVs. The two Permanent Losses columns (current turn and total) only include ground elements that have been destroyed, including previously damaged elements that were destroyed, and does not account for any ground elements that have been damaged. This Total column for men lost should always match the killed/captured/disabled totals. So think of the first column as casualties including those wounded that returned to duty and those sick that will return to duty and damaged AFV and combat vehicles that are not written off and are expected to be repaired. The losses due to retreat attrition from displacement moves do show up in the losses screen. Note that the "Recent Battle and Non-Combat Casualties" column is only zeroed out when the phasing player first goes to the map area at the start of a turn, and just before each battle. As the phasing player moves combat units and causes units with zero CV to conduct displacement moves, the "Recent Battle and Non-Combat Casualties" will continue to increase until the next battle zeroes that column out and the values start again. Losses due to damage during movement also appear in this way.

For example, a battle is fought where 14 AFV ground elements, with crews of 4 men, and 8 infantry squad ground elements with 10 men each are damaged while one infantry squad ground element with 10 men was destroyed. That counts as 7 ($14 \times 1/2$) AFV and $(4 \times 14 \times 1/2) + (8 \times 10 \times 1/2) + 10$ or 78 men in the "Recent Battle and Non-Combat Casualties" column. If this was the first battle of the turn, all that would be listed in the right hand side permanent losses for the current turn would be ten men lost for the infantry squad ground element that was destroyed.

Disabled Men: Permanent losses are not 100 percent permanent, because one percent of the men listed as disabled are returned to the manpower pool per turn. Note that although some disabled troops return to duty, since their devices were destroyed and they only slowly return to duty, as long as they have not returned to duty they still count for victory purposes and are considered "permanent" losses.

In combat, units can take damage or disruption from enemy interdiction in the hex before the ground elements start engaging. The losses from interdiction during a combat will be listed in the combat report (losses caused by very high interdiction values during the air resolution phase will only be in the Losses screen).

15.9.DETERMINING THE WINNER IN GROUND COMBAT

At the end of all combat, the modified combat values for both sides are calculated and compared as a ratio (attacker/defender) to determine the winner and loser of the battle (7.1). If the displayed modified CV ratio is 2:1 or greater, the defender will be forced to retreat. Note that due to rounding in the combat displays, odds of less than 1:1, for example 1:1.001, will be shown as 1:1.0. All of the defending units in a hex will be forced to retreat if the battle is lost. The attacking force will win the battle if the defenders are forced to retreat. The defenders will win the battle if they hold their ground.

GAME PLAY INFO

Displayed Modified combat values are rounded down to a whole number, but the odds ratio uses the actual numbers, which are in the 1000's. As an example, a zero could be anywhere between an actual 0.0 and 999. Same for 1, which could be between 1000 and 1999. To get a better feel for the actual numbers, divide the attackers modified combat value by the attacker's side of the odds ratio. So if final modified combat values of 250 and 1 resulted in an odds ratio of 167.0:1, which left you scratching your head, divide 250 by 167 and you get 1.497, meaning that the defenders' actual modified combat value was approximately 1500,

which was then rounded down to 1. Of course this is only a rough approximation, since the attacker's combat value was actually somewhere between 25000 and 25999. You may also see a zero in the odds ratio, meaning that the unit was so weakened during the battle that its real (not rounded down) modified CV was zero.

15.9.1. FACTORS INFLUENCING MODIFIED COMBAT VALUE

There are many factors that go into determining the modified combat values used in deciding the winner and loser in a ground battle. One of the most critical is the leader combat (mech or infantry) rating check. A successful check can result in the CV of the combat unit being doubled. Several failed checks can result in the CV being halved. As with other leader checks, a failed check by one leader will allow the next leader in the chain of command to attempt a combat rating check, albeit at a reduced chance of success. Other factors that impact the modified combat value include battle losses, the fortification defense modifier (possibly reduced due to attacking engineers), type of attack (hasty attacks halve the overall CV), command battle modifier, leader and unit morale, leader initiative and admin ratings, ground element experience and fatigue, supply status (severe penalty possible if units are isolated), vehicle shortages for attackers and defending reserve units, and effect on fighting in dense terrain.

Units with morale of 50 or less that have no hex to retreat to and that are not in a port with less than 100 percent damage may suffer a very large CV reduction.

Defending units on or adjacent (next to a water hex) to a temporary port hex will have their end of combat CVs multiplied by 4 when determining whether they retreat. If they hold, but would have retreated had they not received this bonus, they will instead suffer additional losses to reflect their fighting to the last to hold the beachhead.

GAME PLAY INFO

Remember the multiplying impact of fort levels on defensive CV and the fact that engineer ground elements can reduce manmade fort levels during the battle, though really only for deliberate attacks as engineering values are quartered during hasty attacks. An attack that gets close, but no cigar, to that 2:1 CV ratio required to win still has chance of reducing fort levels, which will be further enhanced if engineers are participating. Bottom line – make sure you have some engineers in the attack force if you are going up against hexes with high manmade fort levels!

15.10. EFFECT OF DEFENDER RETREAT RESULT

When Defending combat units are forced to retreat, each unit first suffers retreat attrition (15.12). Ground elements in the unit have a chance of being damaged or destroyed, and some ground elements may be captured, with damaged ground elements being much more likely to be captured.

Next, each unit must check to see if it shatters or routs. A unit that is in Supply and forced to retreat may shatter at the conclusion of the combat instead of retreating if it is extremely weak due to a combination of low morale, experience and TOE percentage and is no longer considered a viable combat unit. A unit that is already routed may shatter if in a hex that is attacked and forced to retreat (15.10.2). A combat unit that is in Supply and forced to retreat will rout at the conclusion of combat if the final combat value odds ratio is greater than the morale of the unit. For example, at the conclusion of a battle, a unit with morale of forty will rout if the attacker's adjusted CV is greater than forty times the defender's adjusted CV. The exception is that if a unit has a valid hex to retreat to, then it will not be susceptible to a rout as long as it passes a check where the unit Morale is greater than or equal to 40+Die (15), unless the unit is a brigade or regiment sized unit that is defending alone in a battle (no other units in the hex or committed from reserve). In this case the morale check needs to be greater than or equal to 40+Die (30). This means that normally units with morale that is 55 or greater will never rout, however a regiment or brigade defending alone with morale between 41 and 55 will be more likely to rout, and between 56 and 70 will still have a chance to rout.

Units that rout will perform a displacement move instead of a normal retreat (15.10.4, 15.11). Support units suffer the same fate as that suffered by the unit they are attached to, although support units never remain routed.

Ground elements from units that shatter or surrender may be captured, or may escape. Ground elements that escape are returned to the production pool and will be listed as escaped in the battle tab of the commander's report. Some units that shatter or surrender will attempt to reform (19.1.2). Isolated combat units that shatter suffer the effects of surrendering instead of the

effects of shattering.

Units that retreat or rout are automatically taken out of reserve mode.

There may be a combat delay movement point cost assessed in the defender's hex against any attacking units that move out of that hex during the current player turn (14.1.5).

15.10.1. DEFENDER RETREAT PATH PRIORITIES

Defending units that have not shattered or routed will then attempt to retreat to a friendly controlled hex using the following priorities. Retreating units will tend to retreat to hexes not adjacent to enemy units. They will try to avoid retreating into an over stack condition (i.e. a hex that already has three friendly units), but if they do, they must continue to retreat and take additional retreat attrition losses for each additional hex that they retreat through. Retreating units tend to retreat to hexes that cost fewer MPs to reach, have rail lines, have fort levels and contain fewer friendly combat units. Retreating over unfrozen minor river hexside causes double retreat attrition, while retreating over an unfrozen Major river hexside causes triple retreat attrition. At the conclusion of the retreat, the retreating unit suffers retreat attrition once for each adjacent hex that contains an enemy combat unit. Units on ships that are in a port hex that falls during combat will retreat out to sea (or will be destroyed if there is no hex to retreat to).

15.10.1.1. ISOLATED UNITS RETREAT RESULTS

An isolated unit (15.13) that ends its retreat adjacent to an enemy unit will surrender if Die (50) is greater than the morale of the unit. Units that are isolated will surrender if they have no permissible hex to which to retreat. Fortified Zones that are forced to retreat will always surrender. Combat units that are in supply will rout if they have no permissible hex to retreat to.

NOTE

units cut off in the opposing players turn don't gain isolated status until the next player's turn in the logistics phase.

15.10.2.EFFECTS OF SHATTERING

When a unit shatters, it is considered destroyed and removed from the map. Ground elements in the unit are affected as follows: Damaged ground elements are captured.

Undamaged ground elements may be captured depending on their experience, the distance from their unit to an in supply friendly unit, and whether their unit is completely surrounded by enemy controlled hexes (If $Rnd(60 + \text{range in Hexes to an in supply friendly unit}) > \text{experience of ground element} + Rnd(200^*)$, the ground element is captured. *this value is 100 if the unit is completely surrounded by enemy controlled hexes).

If the ground element is not captured then the ground element's AFV/Combat vehicles, devices and manpower are returned to the appropriate production pools.

15.10.3.EFFECTS OF SURRENDER

When a unit surrenders (whether due to combat or in the logistics phase due to isolation) it is considered destroyed and removed from the map. Ground elements in the unit are affected as follows:

Damaged ground elements are captured.

Undamaged ground elements may be captured depending on their experience and the distance from their unit to an in supply friendly unit (If $Rnd(120 + \text{range in Hexes to an in supply friendly unit}) > \text{experience of ground element}$, the ground element is captured).

If the ground element is not captured then the ground element's AFV/Combat vehicles, devices and manpower are returned to the appropriate production pools.

15.10.4.EFFECT OF ROUTING

When a combat unit routs, it has its CV set to zero and then the unit performs a displacement move (15.11). Units can rout through a port to another port without additional impact (other than normal rout/retreat attrition). Routed units may move but may not move adjacent to an enemy unit unless stacked with a friendly combat unit. Routed units do not participate in combat, but if part of a stack that is attacked and is forced to retreat, the routed unit will be shattered. Routed units do not have a ZOC and will not gain control of adjacent unoccupied enemy hexes. Routed units are forced to make a displacement move if they are alone in a hex and are next to an enemy unit (if the routed unit is isolated, it will shatter). Routed units may not move via rail or naval transport. Routed units will not change their TOE, cannot receive replacements and cannot gain morale (9.1.1). Support units don't remain routed, but do take retreat attrition and displace if the unit they are attached to routs.

15.10.4.1. RALLYING ROUTED UNITS

Each turn during the friendly logistics phase a routed unit will attempt to pass a range test to an HQ unit in its chain of command in which $Rnd(\text{range to the HQ unit})$ must be less than six. If this test is passed then the leader of the HQ unit attempts to rally the unit with a successful morale rating check.

15.11. DISPLACEMENT MOVES

A displacement move is a special type of movement by non-phasing combat units that have been routed or zero CV units that find themselves adjacent to an enemy combat unit.

There are several conditions that cause a unit to make a displacement move:

A combat unit routs following a retreat result after combat

A unit with zero CV finds itself adjacent to an enemy unit while not stacked with a friendly, non-depleted combat unit. This would include HQ units, on-map construction support unit, or a depleted or routed combat unit. Note that there are instances, such as if a unit becomes depleted during the air execution phase, where a zero CV unit can end up next to an enemy unit and not automatically displace. Displacement will then occur when an enemy unit moves next to such a unit

In some cases when a unit with a zero CV is part of a stack forced to retreat due to combat.

15.11.1. DISPLACEMENT MOVE PROCEDURE

A unit performing a displacement move takes retreat attrition, and then will displace to the hex containing the HQ unit to which it is attached, or to a hex adjacent to its HQ unit. The displacing unit cannot move next to an enemy unit if there is no friendly combat unit in the hex. If it is not possible to displace to or adjacent to its HQ unit, or the HQ unit is greater than 10 hexes away, then the unit will displace to a nearby town, city or urban hex, generally to the west for Western Allied units and to the east for Axis units. A unit will not displace to a hex that has a non-isolated enemy unit within two hexes. Units will not displace to an isolated town, city or urban hex or HQ unit unless the unit is already adjacent to the HQ unit. Units that rout may only move to cities/towns that are less than 24 hexes away and which are on a linked rail line or are a linked port. If they are unable to rout move to a valid HQ unit or city/town, they will surrender.

On the first turn of any scenario, units will not displace to their HQ units, but instead only displace to nearby town, city or urban hexes. Support units that are attached to a displacing unit will suffer retreat attrition and move with the displacing unit.

NOTE

voluntary relocation of a headquarters unit (7.7.5) has the same deleterious effects as a displacement move, and the HQ unit will not relocate to its HHQ unit, but always to a nearby town, city or urban hex.

15.11.2. ISOLATED UNIT DISPLACEMENT

Isolated combat units will shatter if forced to displace. Isolated non-combat units performing a displacement move will suffer double retreat attrition but they can displace to a location where they are no longer isolated. This represents the fact that the assets of a non-combat unit, such as headquarters units, can be spread over a very large area and many of them would not actually be trapped when a pocket is formed.

15.12. RETREAT ATTRITION

When a unit retreats or displaces, it suffers retreat attrition, which can result in some of its ground elements becoming damaged, destroyed or captured. The extent of retreat attrition is based on the unit's current morale and the experience and fatigue of the unit's ground elements. Units with higher morale and ground elements with higher experience and lower fatigue will suffer less from retreat attrition. Damaged ground elements are even more likely to be captured, dependent on their experience and whether the unit has a support squad ground element shortage. Damaged ground elements can also have their equipment destroyed while the manpower in the ground element is classified as disabled. Organic generic vehicles can be damaged or destroyed as a result of unit retreat attrition. Units that are forced to retreat across a river hexside will suffer double the normal retreat attrition for a minor river and triple the retreat attrition for a major river.

The amount of motorization of the unit, the morale of the unit, and the final odds of the battle impact retreat attrition suffered by defending units that lose a battle. Defending units that retreat do have a chance to avoid retreat attrition. Also, retreat attrition is directly related to the final odds of the combat, with the higher the odds the greater the retreat attrition. First the unit checks to see if the number of vehicles in the unit is greater than $\text{rnd}(\text{number of vehicles needed to fully motorize the unit})$. If it is, then the odds are changed to 1 to 1 and virtually no retreat attrition will occur. If the unit fails this check, it makes a morale check and if $\text{rnd}(50) < (\text{rnd}(\text{unit morale}-50))$ then the effective odds are doubled for determining retreat attrition. If the unit fails the vehicle test, it gets one more chance to reduce the odds to 1 to 1 (no matter the result of the morale check just mentioned). The unit once again checks morale to see if $\text{rnd}(50) < (\text{rnd}(\text{unit morale}-50))$ and if it pass this test, then the odds are reduced to 1 to 1 with the results per above.

15.13. ISOLATED UNITS AND HEXES

Units and unoccupied friendly hexes are isolated if they cannot trace a path of any length to a railhead (20.2). Units cut off in the opposing players turn don't gain isolated status until the next player's turn in the logistics phase. Isolated hexes that are not

occupied by a friendly unit, or adjacent to a friendly combat unit will switch control to the other side automatically during the next friendly logistics phases (6.3.4).

Isolated combat units will not rout, but will surrender instead. Isolated headquarters units will undergo a displacement move (15.11). Admin and Initiative checks are twice as hard to make for isolated units. Players who desire to remove headquarters units from a pocket of isolated units rather than wait for the enemy to displace them can voluntarily relocate the HQ unit during their action phase (7.7.5). Isolated units are limited to building fortification levels to no more than fort level two.

Isolated on map units can change attachments only to HQ units inside the pocket with them, and only if within 100 MPs. Support units attached to isolated HQ units can only be reassigned to other HQ units in the same isolated pocket and only if within 100 MPs.

Depots in isolated hexes will lose five percent of their freight each turn in the logistics phase to reflect that some of the freight would not be material that is needed by the isolated units. Isolated units can draw replenishment using non-vehicle methods (20.4.1.1). They can also draw freight from depots inside the isolated pocket by using vehicles already in the depot or by having the depot take vehicles from the units to use to distribute freight from the depot. Isolated units cannot receive replacements.

V1.00.11 – 14 January 2015

Isolated units that are very low on supplies will suffer additional fatigue and damage to their elements during the logistics phase.

V1.00.37 – 7 May 2015

New Rule - Isolated units will try to resupply themselves from depots to avoid isolation damage.

New Rule - Isolated units are not eligible to be sent to the East Front.

15.13.1. ISOLATED UNIT COMBAT VALUE PENALTIES

Isolated units suffer a supply related CV penalty that is equal to the percentage of needed supplies for non-motorized units or fuel for motorized units times the percentage of needed ammo. Isolated units have their combat value divided by two in addition to any reductions due to actual shortages of supplies, ammunition and fuel. Isolated units will fire only 1/4 as much as they would if they were not isolated in order to save ammunition.

In addition, when calculating the modified CV ratio to determine whether a defender will be required to retreat, isolated defending units may have their CV divided by two if they fail certain checks based on their morale, and the distance to the nearest supplied friendly units. However, when defending units are in a hex with a defensive fortification modifier of five or greater (terrain plus fort level), then the above CV penalty does not apply. Instead, they undergo a check based on the defensive fortification modifier and their morale that may result in their CV being halved (CV halved if (random(25))/fort level is greater than random (unit morale)).

Units in port fortresses, defined as ports with fort level 3 or 4, do not suffer a combat penalty for being isolated. They still suffer normal penalties for any shortages of supply, fuel, or ammo.

15.14. CAPTURED CITIES, DEPOTS, AND AIR BASE UNITS

When a town, city or urban hex changes control, factories located in that hex will sustain damage (21.2). In addition, anti-aircraft units stationed in the city will either be destroyed or evacuated to their assigned HQ unit. Mobile anti-aircraft units assigned to cities that are not in isolated status may escape to a nearby HQ when that city is captured (7.4.1).

Depots and Air Base Units are fixed facilities that cannot retreat or displace. Enemy Air Base units that are captured will attempt to evacuate their air group units and then convert to an empty friendly air base unit (8.2). When a depot is captured, most of the freight is destroyed (causing the destruction of some fuel and supplies from the player's pool), but some small amount of freight is captured resulting in the placing of fuel and supplies in that location for the capturing player's use. In addition, a small number of vehicles are destroyed and the rest are returned to the pool. With the exception of depots in port hexes, captured depots are destroyed (20.1.6). An exception is that for a permanent port only (not temporary ports or Mulberry harbors (16.8)), if a depot is captured the capture procedure is followed, but rather than being destroyed, it then automatically becomes a depot owned by the capturing player and it is assigned a supply priority of 3. In addition, for permanent on-map ports without a depot, on the turn a port is captured, a depot is automatically built with priority 3 in the hex. .

15.15. REDUCTION IN DEFENDER MP'S

When a unit is attacked, depending on the odds, it will suffer a loss in movement points during its next turn due to the attack. The loss of MPs is equal to the standard attack cost that a unit would have paid had it made the attack. For example, if it was a deliberate attack and the defending unit is motorized, it would pay lost 16 MPs from its next turn MPs. This standard attack cost is modified as follows based on the odds of the attack:

No modifier if odds are 1.5 to 1 or greater

75 percent of cost if odds are 1 to 1 to 1.49 to 1

50 percent of cost if odds are .5 to 1 to .99 to 1

No cost if odds are less than 1 to 2.

When a unit is attacked in the amphibious phase, which comes after the unit's MPs are set, any loss of MPs due to enemy attacks is immediate and can leave a unit with 0 MPs at the start of their turn.

16. NAVAL AND AMPHIBIOUS OPERATIONS

Naval movement and operations in Gary Grigsby's War in the West are in direct support of ground operations and include naval transport, amphibious transport, assault and naval gunfire support, and naval interdiction, which are complemented by air naval interdiction (17.3.5). Eligible units may utilize naval or amphibious naval transport to move through sea and ocean water hexes. Units can move by naval transport between friendly ports and by naval amphibious transport from a friendly port to assault any eligible coastal hex. A shipping pool of troop and cargo ships is used to move units and freight by sea using strategic movement points (SMP) with ship load and unload costs not unlike rail movement. Amphibious transport and assault is limited to non-armoured combat units, is conducted in the amphibious phase during the enemy player turn, and requires the use of amphibious headquarters units and a certain amount of preparation time over a number of turns.

When in Naval Transport mode (F3), Amphibious Transport mode (F4), or Air Transport mode (F9), assigned (pending) amphibious invasion and associated airborne landing hexes will be displayed on the map. Amphibious landing ground hexes will be shaded red, the water hexes Amphibious HQ units will move to will be shaded blue and airborne landing hexes will be shaded light blue. In addition, When in either naval movement mode, the remaining Port Capacity for friendly ports will be displayed on the map for each port with the number in the port circles on the map equal to 1000 tons of remaining load/unload capacity.

When in naval transport or naval amphibious modes and a unit is selected for movement, the naval contested hexes will be slightly darkened and enemy controlled hexes will be dark. Movement through these hexes is allowed, but at greater attrition levels (16.5.2). Units cannot move through or adjacent to an enemy amphibious HQ unit while in naval transport mode.

Units loaded 'on ships' are automatically put into ready mode and cannot be put into reserve or refit as long as they are on ships.

Naval or amphibious transport is not affected by ice levels.

Entrained units may not move via naval or amphibious movement.

V1.00.07 – 19 December 2014

Improved the path selection routine for naval movement made during an amphibious invasion (to minimize movement through enemy controlled and neutral hexes).

When one player is set to be played by the AI, the human player is now able to see the units on the map during the amphibious landing phase, even when FOW is on. This may result in a little more information for the German player as Allied units will be fully visible, but we decided that player's would appreciate seeing the invasions.

16.1. TRANSPORT SHIPS

There are two types of ships used to regulate naval transport, troop ships for units and cargo ships for freight. Transport ships are tracked as separate production pool items (20.1.5). Troop ships have a capacity of 1000 tons of unit load and cargo ships can carry 250 tons of freight. Each transport ship in the pool may be used for one mission per turn. Cargo ships used during the supply phase may not be used during the action (move) phase. Transports will be removed from the pool and attached to Amphibious HQ units to allow amphibious movement. When in naval or amphibious transport mode, the number of available troop and cargo ships is displayed in the general information and city box in the right hand corner of the screen. For the Axis player, this is divided into two areas, Atlantic and Med.

16.2. PORTS AND DEPOTS

There are two types of ports. Permanent ports are fixed pre-existing facilities that can be damaged, but will always be on the map. Temporary ports are established as a result of a successful amphibious invasion and represent the over the shore movement of units and freight at a beachhead that has been established by an amphibious landing and maintained by naval forces that remain in the vicinity of the landing site. Naval forces are represented by an amphibious HQ unit, so if the amphibious HQ unit departs, the temporary port will cease to exist. The Western Allies have a limited capability to turn several temporary ports into permanent ports by building a Mulberry harbour.

Temporary ports are only created in target hexes that don't already have a permanent port, but if there is a size 1 or 2 port in the invasion target hex, the port will be immediately fully repaired upon capture.

Each undamaged port level (factory) produces 15k tons of load/unload capacity. For example, an undamaged port level 2 will have 30k of capacity and will show a value of 30 in the port circle at the start of the turn when in F3 or F4 mode. Units cannot load/unload to/from ships at permanent ports unless sufficient port capacity is available. As port capacity is used up, the tonnage number in the port circle will decline. Loading/Unloading of freight in permanent ports also uses port capacity. Unloading of units in temporary ports does not use port capacity as the temporary port is simulating units and freight being offloaded at a beachhead. In all cases for loading/unloading, Transport ships must be available.

Ports with five percent or more damage will only operate at half of their normal capacity. A level 2 port with 20 percent damage would normally get $2 \times 15,000 \times .8$ or 24,000 tons, but because it is over 5 percent damage, it will only get 15,000 tons.

When temporary ports are captured they are destroyed and removed from the map. The depot at the temporary port is captured and destroyed as well (15.15). If a port with a Mulberry harbor is captured, the port remains, but the depot will be captured and destroyed.

On the turn a permanent port is captured by either player, a depot is automatically built with supply priority 3 in the hex. If an amphibious landing succeeds in capturing the target hex then a temporary port with a level 2 depot set to priority 4 will automatically be formed in that hex (16.7.3).

Ports get their port transportation capacity generated near the end of the logistics phase, so when a port is captured by regular ground combat rather than an amphibious invasion, it won't receive any capacity until the end of the next logistics phase, so no freight will enter on the next turn. Since amphibious invasions occur during the Axis player's turn, in the Allied logistics phase of the turn of invasion, they will get some port capacity, but not much tonnage as the port is damaged at the time it receives its capacity. The port will receive some freight dependent on its size and percentage of damage.

If the port capacity is not used up loading or unloading units during the movement phase, it will be available in the next logistics phase to unload/load freight.

V1.00.00 – 21 November 2014

Barrage Balloons – All ports are assumed to have barrage balloons that will impact any raid that is bombing anything in the port's hex. Aircraft bombing under 3000 feet have a chance of being destroyed by the barrage balloon equal to two times the size of the port (port 3 means 6% chance bombing aircraft will be destroyed). For night missions, the percentage chance is tripled (so port level 3 has an 18% chance of destruction).

16.2.1. INLAND PORTS

Inland ports are considered part of the same sea as the sea or ocean water hex that accesses the inland port. Inland ports require a player to have control of all of the land hexes along the river and/or ferry hexes between the sea and the port (for unit and supply movement to/from the port). The list of inland ports and hexes needed for ownership:

INLAND PORTS											
Name	Port Hex	Closest water/ port hex	Hexes that must be owned								
Bordeaux	73,228	73,226	72,227	73,227							
Nantes	71,208	68,207	69,207	69,208	69,209	70,208	70,209				
Manchester	75,158	72,158	71,159 73,160	72,159 74,160	73,159 72,158	74,159 74,158	72,160	73,160	74,160	72,158	74,158
London	82,176	83,177	84,176	83,176	83,177	82,177					
Rochefort	72,218	73,219	73,218	72,219							
Antwerp	100,181	98,179	97,178 98,180	98,178 99,180	99,178 100,180	99,179 99,181	97,180	98,180	99,180	100,180	99,181
Rotterdam	101,175	99,175	100,175	100,176	101,176						
Amsterdam	103,172	101,171	102,171	102,172							
Stettin	143,164	143,159	143,160	144,160	143,161						
Luebeck	127,161	128,159	128,160	129,160	128,161						
Hamburg	124,163	121,161	122,161	123,162	124,162	122,163	123,163				
Bremen	120,167	118,163	118,164 119,166	119,164 120,166	118,165 118,167	119,165 119,167	118,166	119,166	120,166	118,167	119,167

16.3. GROUND UNIT NAVAL TRANSPORT

Naval transport can be conducted by non-routed, non-frozen ground units. Each unit has a naval transport load cost listed in the unit detail window in tons. For that unit to use naval transport movement there must be sufficient troop ships available to conduct the applicable type of movement. The number of troop ships required to transport the unit will be deducted from the troop ship pool every turn it uses naval transport movement, even if it just moves one hex. Units can end the turn at sea or in a port still loaded on ships. The Western Allies players' ground units can use naval transport to transit between the United Kingdom and the Mediterranean. Units on ships are automatically put into ready mode and cannot be put into reserve or refit as long as they are on ships. Though support units do not use naval transport movement per se, changes in attachment between HQ and combat units that are separated by sea and ocean water hexes will result in the use of freight points from port to port for each transfer. Section 5.4.3 provides details on using the game interface to conduct the naval transport of ground units.

16.3.1. STRATEGIC MOVEMENT POINTS AND NAVAL TRANSPORT COSTS

All units have 200 Strategic Movement Points per turn, including Static units which can move by naval transport. When static units are mobilized they have 100 SMPs on the turn they are mobilized. Tactical MP and SMP are expended proportionally so that use of one movement mode will decrease the remaining allowance of the other. For example, a headquarters unit with a MP of 50 and a SMP of 200 expends 10 MP of tactical movement to move to a port hex, resulting in a remaining allowance of 40 MP and 160 SMP.

There is a variable SMP cost to load or unload from ships. Units without enough remaining SMP at the desired destination will be unable to unload and must remain 'on ships' in a sea or ocean water hex until the next friendly movement phase.

16.3.1.1. PORT LOAD/UNLOAD COSTS

To load a ground unit at a port the SMP cost is $50 - (\text{remaining capacity in 000s of tons} / 7.5)$. For example, a level 2 port 30k ton capacity remaining would require the loading unit to expend $50 - (30 / 7.5)$ or 46 SMP. To unload a ground unit at a port the SMP cost is $150 - (\text{remaining capacity in 000s of tons} / 1.5)$. Continuing the example, the same unit could unload at another level 2 port with 30k capacity remaining if it had $150 - (30 / 1.5)$ or 130 SMP available.

16.3.2. UNITS 'ON SHIPS' INTERACTION WITH ENEMY UNITS

If a unit on ships is in a port hex with no friendly combat unit stacked with it, it will make an offset move out to an adjacent sea or ocean water hex without suffering any losses if an enemy unit moves next to it. It will also make an offset move to an adjacent water hex if other friendly units lose a battle in the same hex and are forced to retreat. In addition, it will make an offset move to an adjacent water hex if it tries to move into a port next to an enemy unit without a combat unit.

Units in naval transport mode that are located on a coastal hex that was a temporary port can always move out to sea even if the temp port subsequently is removed from play.

Enemy units that remain in a sea or ocean water hex 'in ships' at the end of their turn block the naval transport of friendly units through that hex. Units on ships in water hexes and the transports on which they are embarked will be destroyed if an enemy amphibious HQ unit utilizing amphibious transport moves adjacent to them (16.6.2).

V1.00.00 – 21 November 2014

In section 16.3.2, when calculating the AV, changes have been made to reduce the ability to move 1 hex at a time by sea and suffer less damage than moving through many hexes at once (various steps that could truncate values have been changed to allow for the possibility of rounding up instead of just truncating the AV value.

16.3.3. INTER-THEATRE NAVAL TRANSPORT

There is no direct water connection between Northern Europe and the Mediterranean, however, Western Allied ground units, to include Amphibious HQ units, can use naval transport mode to move between the United Kingdom and the Mediterranean. First place the unit(s) in naval transport mode (F3), and then move them to a water hex on the west edge of the map. At the start of the next Western Allied player turn, the unit(s) will be placed in or adjacent to the applicable arrival port. This is Liverpool for transits from the Mediterranean to the UK and Oran for transits from the UK to the Mediterranean. Amphibious HQ units will arrive a few hexes offshore from the applicable arrival port. Axis units cannot use naval transport to move from the Atlantic to the Mediterranean.

V1.00.37 – 7 May 2015

Formula Adjustment - Made a change to displacement/rout movement priorities to try to limit rout movement of units from Africa to Europe.

16.4. CARGO SHIP FREIGHT TRANSPORT

Cargo ships are used to transport freight, normally between friendly ports during the logistics phase. Cargo ships are also attached to amphibious HQ units to deliver freight required to support amphibious assaults, to include temporary depots and air base units built as the result of a successful landing.

16.5. TRANSPORT SHIP ATTRITION AND INTERDICTION

Ships may be lost, along with their cargo, whenever they are used for naval transport, amphibious transport, or for movement of freight during the logistics phase. Ships may also be lost when in an amphibious HQ unit. Note that for the purposes of this game, when a ship is described as being sunk, it actually represents ships sunk or damaged sufficiently to take them out of action for the rest of the game.

V1.00.13 – 26 January 2015

Transport losses - Reduced manpower losses when transports are sunk at sea. Now, ½ of the manpower in the elements destroyed are placed in the manpower transit pool.

V1.00.37 – 7 May 2015

Formula Adjustments – Adjusted cargo and troop ship losses. Changed naval move attrition formula (done by hex basis). 60% of affected unit personal should get damaged instead of disabled.

h. Interface Changes - Changed text message from "SUNK" to "HIT" when a transport is hit and removed from play. Added messages for men disabled (damaged) and lost (killed).

16.5.1. LOGISTICS PHASE SHIP MATERIAL ATTRITION

Cargo ships used for movement of freight in the logistics phase have a one percent chance of being considered sunk. No freight is lost due to this type of attrition as much of this is ships losing time in theatre due to emergent material casualties or requiring refit.

16.5.2. NAVAL SEA AND AIR INTERDICTION

Naval air and sea interdiction determines control of sea hexes through the interaction of naval air patrols, air superiority and fighter interception, and naval interdiction from ports (17.3.5) and the impact on ships moving through those sea hexes. Ships conducting naval and amphibious transport and carrying freight in the logistics phase as well as the cargo they carry are subject to naval interdiction attrition based on the movement path they follow.

In all three cases, a naval path attrition value (AV) is calculated as follows:

1. Add for each hex moved through
 - +1 if friendly controlled hex
 - +2 if neutral hex (SHIPPING CONTESTED in hex pop-up while moving)
 - +3 if enemy controlled hex (SHIPPING HEAVILY CONTESTED in hex pop-up while moving). Not applicable during the logistics phase as the computer will not allow movement by cargo ships through enemy controlled hexes.
 - + (enemy double digit interdiction value-9)/x where x=1 if adjacent to a land hex, x=2 if not adjacent to a land hex and a naval transport move, and x=5 if not adjacent to a land hex and an amphibious move. – This is true only if enemy double digit interdiction value is >9
 - +1 if $\text{rnd}(10) < \text{air weather value of hex}$ (0=clear, 1=rain 2=heavy rain, 3=cold, 4=snowfall 5=blizzard)
2. Take the total for all hexes moved through from step 1 and randomize it to between 50-100% of the total
3. Divide the total from step 2 by 10
4. If the total from step 3 is greater than 180, set it to 180. This value is now the AV.

For Naval Transport and movement of freight during the logistics phase, for each ship moving, it is considered sunk if $\text{rnd}(100) < \text{rnd}(\text{AV})$. Amphibious transport losses are described in section 16.6.2.2 and 16.7.1.

Example: A unit is moved by naval transport by 4 troop ships through 9 friendly controlled hexes with clear weather, 2 neutral hexes (1 with clear weather and 1 with heavy rain), and 1 enemy controlled hexes (rain). Only the first and last hexes moved are next to land. Only the last 2 hexes have enemy interdiction values, and they are 8 and 33 in the rollover. The total AV would be:

1. +9 for friendly controlled hexes, +4 for neutral hexes, +3 for enemy hex, +0 for the interdiction of 8, +24 for the interdiction value of 33 $((33-9)/1)$, 20% chance of +1 for heavy rain hex, 10% chance of +1 for rain hex. Total +40 (let's assume the weather does not add any points).
2. The total is randomized between 20 and 40 (let's assume 30)
3. The total is divided by 10 and is now 3.
4. AV = 3

With an AV of 3, each of the 4 troop ships would check if $\text{rnd}(100) < \text{rnd}(3)$, which gives each troop ship about a 1.5 percent chance that it would be sunk. When a ship is sunk in this case, the material on the ship is destroyed, which will result in damaged or destroyed ground elements. Players will get a message on the screen if a troop ship is sunk during a naval transport move.

V1.00.07 – 19 December 2014

Rule Change – Changed +3 for moving through an enemy controlled sea hex to +15 in step 1 when determining AV (attrition value). This will make sea movement or invasions that trace through enemy hexes more likely to take shipping losses.

V1.00.37 – 7 May 2015

New Rule - Made fighter naval values reduce total naval interdict values, not only from the auto naval missions as before but also during air superiority flights.

Formula Adjustment - Increased effect of naval radar on naval interdiction.

Formula Adjustment - Made harder to generate high naval interdiction values.

16.6. AMPHIBIOUS NAVAL TRANSPORT

Amphibious naval transport (F4) includes preparation, amphibious movement to the target hex, amphibious invasion operations, to include landing attrition and assault combat to take the target hex, and establishment of a beachhead, to include a temporary port, depot and airfield, Amphibious HQ units represent the naval forces, to include transport ships, naval gunfire support, and aircraft carrier based air interdiction, required to conduct an amphibious invasion and provide over the shore resupply through the beachhead. The Allied player can upgrade two temporary ports to permanent ports by building Mulberry harbors.

16.6.1. AMPHIBIOUS INVASIONS

Amphibious invasions may be initiated (5.4.4) by Allied Amphibious HQ units using combat units to invade clear, woods, bocage, and city terrain hexes. The steps involved in an amphibious invasion are first; having the amphibious HQ and units stacked with it in a port target an enemy hex for invasion. After spending turns accumulating preparation points for this invasion, the HQ can be ordered to execute the invasion once it has accumulated at least 50 prep points. Combat units must have at least 30 prep points before they can participate in an invasion.

The invasion will then take place after the enemy player's next logistics phase. Armoured divisions and HQ units other than amphibious HQ units cannot participate in amphibious invasions. Note that there is no restriction on these types of units utilizing regular naval transport to move to ports opened by an amphibious invasion in the enemy players turn.

Players can target hexes for amphibious movement no matter what the sea control status, i.e. even if the path goes through enemy controlled water hexes. Amphibious HQ units will be able to select Invade if the path goes through enemy controlled water hexes, but with the anticipation of significant attrition to cargo and troop ships and their cargoes. A warning text box will display after the standard Amphibious invasion Y/N confirm message when the path is going through enemy controlled sea hexes: Amphibious path contains x enemy hexes – continue? Y/N.

It is possible to launch multiple amphibious invasions on the same hex. This allows multiple beach hexes that can only be reached from one water hex to be invaded (in this case extra units are placed within a few hexes offshore of the beach, but the units will invade when the time comes). It also allows players to launch two different amphibious HQs against the same hex. Each amphibious HQ will land the associated units separately, and each will fight a separate battle. If the first attack takes the hex, you will see another combat when the 2nd amphibious HQ lands, but there will be no defending units. This allows 2 amphibious HQs, each with 1 division to launch a 2 division attack against one hex.

When an invasion is ordered during the movement phase, the amphibious HQ and associated combat units conducting the invasion are moved out to sea in the hex next to the beach hex being landed at. Amphibious invasions are executed after the enemy player's next logistics phase. If a target hex is unoccupied by enemy combat units then the amphibious combat units will move into and take control of the hex. If a target hex is occupied by enemy combat units then the amphibious combat units will attack the targeted hex from the sea hex adjacent to the targeted landing hex.

16.6.2. AMPHIBIOUS HQ UNITS

Amphibious HQs are used for the amphibious movement of combat units and the naval transport of units and supply over beaches (when a port is unavailable). Amphibious HQs may have attached naval support groups representing ships to provide artillery support for amphibious assaults and ground combat in adjacent land hexes. Amphibious HQs may only use amphibious and naval transport movement. They may never enter a non-port land hex. They may enter a ferry hex and assist units attacking over a ferry hex. Neither enemy supply trace nor enemy naval transport can pass through hexes adjacent to an Amphibious HQ unit. If an amphibious HQ unit moves next to an enemy unit at sea (on ships), the enemy unit as well as the naval transports on which they are embarked will be destroyed. When an amphibious HQ unit is ordered to invade, any enemy unit at sea along its path will be destroyed. In addition, Amphibious HQ units will bombard any enemy units in adjacent land hexes at the end of that players air execution phase, potentially causing damage to ground elements. At the end of the Western Allied player turn air execution phase, each amphibious HQ unit will automatically bombard all adjacent Axis ground units potentially causing damage to some Axis ground elements in both the combat units and any attached support units. Amphibious HQ units project fighter naval patrols into water hexes within 2 hexes of the amphib HQ unit, representing carrier based aircraft that can reduce enemy naval interdiction (17.3.5). Level 1 and 2 ports that are adjacent to an amphibious HQ unit are immediately fully repaired in the Allied logistics phase.

16.6.2.1. NUMBER OF SHIPS ATTACHED TO AN AMPHIBIOUS HQ

Troop and Cargo transport ships must be attached to amphibious HQs to allow amphibious transport movement. Transports are moved from the ship pool to the amphibious HQ unit at the moment units are told to launch an amphibious invasion and can be seen listed on

the unit detail screen for the HQ unit in the same place where other elements in the amphibious HQ unit are listed. The number of troop transports required for amphibious movement is equal to the number required for the naval strategic movement of land units for the land units that are invading. The number of cargo ships attached is equal to the number of troop ships. These ships will remain attached to the amphibious HQ unit until it is in a permanent port hex during a friendly logistics phase, at which time they will be placed back into the pool. If while at sea, the number of troop or cargo ships falls below 10, then the appropriate ships will be taken from the pool and attached to the amphibious HQ to bring the number of troop and cargo ships back up to 10 (10 for each, although if there are not enough ships in the pool to reach 10, no ships will be moved from the pool).

Example: An amphibious HQ and an infantry division are given amphibious orders. The division has a transport cost of 22,000 tons. 22 troop ships and 22 cargo ships would be required for amphibious movement. For regular naval transport movement, only 22 troop ships are required

PLAYER NOTE

Since maintaining a temporary port requires that an amphibious HQ unit must be in a water hex adjacent to the temporary port or in the temporary port, using one amphibious HQ unit to maintain several beachheads will reduce shipping attrition as opposed to having to use multiple amphibious HQ units. So there is an advantage to having contiguous beachheads that can be serviced by a small number of amphibious HQ units.

16.6.2. AMPHIBIOUS HQ AT SEA ATTRITION AND DAMAGE TO AMPHIBIOUS HQS

Amphibious HQ units that are at sea (defined as being in a water hex or a temporary port hex) during the logistics phase will suffer damage and transport ships attached to them may be sunk.

The chance of attached transport and cargo ships being sunk is determined as follows based on location of the amphibious HQ unit:

1. Calculate the value AG by first adding $(\text{Rnd}(10) + (\text{enemy double digit interdiction value in hex})) / 10$ and truncating
2. Add to AG the value for coast defences as done in step 2 of section 16.7.1
3. Randomize AG (pick a number randomly between 0 and AG and this becomes the new value of AG)

Each attached transport and cargo ship checks and if $\text{Die}(20) < \text{Die}(1 + \text{AG} + (\text{weather value of hex} * 2))$ then the ship is considered sunk and removed from the game. The weather value of the hex for this check is based on the air weather, 0=clear, 1=rain 2=heavy rain, 3=cold, 4=snowfall 5=blizzard.

Amphibious HQ units themselves can be damaged while at sea and this damage can be repaired when in a permanent port during the logistics phase. The current damage of an amphibious HQ unit is shown on the right unit bar. Damage is added to an amphibious HQ unit at sea each turn in the logistics phase as follows:

1. Calculate AG value as per 3 steps above.
2. Add 1 plus the air weather value of the hex (0=clear, 1=rain 2=heavy rain, 3=cold, 4=snowfall 5=blizzard)
3. This total is the damage added to the amphibious HQ unit

Once an amphibious HQ unit's damage is greater than 99, it is withdrawn from the map and set to reappear as a reinforcement unit in 12 turns. An amphibious HQ unit that is in a permanent port during the logistics phase will have some of its damage repaired (the larger the port, the more damage repaired).

V1.00.07 – 19 December 2014

Rule Change - Amphib HQs that move at sea using normal Sea Movement can now suffer damage during movement. A pop-up message will appear reporting the damage taken. This is similar to how a unit at sea can have a transport sunk while moving.

16.6.3. AMPHIBIOUS PREPARATION

Eligible combat units that begin their turn in a port, stacked with an amphibious HQ that has targeted a hex for invasion, will accumulate amphibious preparation points (APPs). APPs will be used to limit the amount of damage that the unit incurs while making an amphibious move. Units may accumulate a maximum of ninety APPs. The number of APPs that may be accumulated in a single turn is dependent on the size of the port and varies with the size of the unit as follows:

Add truncated (port value/2)

Add truncated $(54 / \text{size of forces in hex})$ where each combat unit in the hex has a size value where Division=9, Independent Brigade=5, Regiments and Broken down division units (1/ 2/ 3/ regiments and brigades) =3 and a permanently motorized unit has 1 added to the size.

Example1: Amphibious HQ in port 4 with Infantry Division and Armoured Brigade in the hex. All three units would receive 5 prep points per turn $(4/2=2$ for the port and $54/(9+5+1)=3$ for the units in the hex). Example 2: Amphibious HQ and Infantry Division in

port 7. Both would receive 9 prep points per turn (3 for the port and 6 for the size of forces). Example 3: Amphibious HQ and infantry regiment broken down from a division in Port 9. Both would receive 22 prep points per turn (4 for the port and 18 for the size of forces).

Amphibious HQs may not order an Invasion unless they have at least 50 prep points (no Invade button will be visible on the unit). Combat units must have at least 30 prep points before they can participate in an invasion.

APPs will be set to zero whenever a unit completes an amphibious invasion or if the unit spends a logistics phase not in a permanent port hex or not stacked with an Amphibious HQ (moving from port to port will not cause the loss of prep points). Note that as long as a unit remains in a port in each logistics phase, it won't lose prep points. It checks only during the logistics phase that it is in a port, and if not, that's when it would lose prep points. This is intentional. So prepping units can move from one port to another as long as they end the turn in a port with a prepping Amphibious HQ. Amphibious HQs and units stacked with them lose 2/3 of their prep points when the amphibious target is changed (except on turn 1 of scenarios that allow units to change their invasion targets and maintain a certain number of prep points as specified in the scenario description).

Attaching a support unit to a unit prepping for an amphibious invasion will result in the loss of 10 preparation points, though prep points will never drop below zero.

Amphibious HQ units and units stacked with them will not gain prep points when in a temporary port, nor will an amphibious HQ gain prep points when not stacked with an invasion capable combat unit.

After the invasion makes it ashore, players must leave an amphibious HQ unit at sea next to the temporary port created by the invasion in order for it to continue to operate. When a temp depot is created (or a permanent port is captured) during an invasion, 250 tons of freight are placed in the depot for every cargo ship with the amphibious force being landed. The amphibious HQ immediately repairs any size 1 or 2 port in the invaded hex, provides defensive fire for combat taking place in the beach hex, and provides some limited air value to defend shipping representing the Escort carriers and anti-aircraft fire from the escorts of the invasion force).

16.7. AMPHIBIOUS INVASION AND ASSAULT

During the amphibious phase in the enemy turn, the invading ground units will attempt to move into the target hex. First the invasion force transport ships and ground units undergo landing attrition. Then multi-role commando type support units will attempt to land in hexes adjacent to the target hex. If the target hex has defending enemy units, the invading ground units will conduct a deliberate attack to capture the hex.

16.7.1. AMPHIBIOUS INVASION ATTRITION

Several factors go into determining the number of troop and cargo ships lost during an amphibious invasion, along with the number of ground elements that are destroyed and damaged, before any ground combat against defending units in the invasion hex is resolved. First, troop and cargo ships may be lost, along with some of their cargo. Next, ground elements may be damaged due to the general difficulty of amphibious landings and compounded by insufficient preparation.

The number of ships lost is dependent on the enemy naval sea and air interdiction capability, the fortification level of the defending hex (and hexes adjacent to the water hex containing the amphibious HQ) and the weather. To determine the number of troop and cargo ships sunk an amphibious invasion attrition value (AIAV) is calculated as follows:

1. Calculate an AV value as per section 16.5.2.
2. Add to this AV total a value for coastal defenses based on fort levels of the invaded hex and hexes that are adjacent to the amphibious HQ's hex but are not the invasion target). The value used is from the following chart:

FORT LEVEL	NON-PORT HEX TARGET	PORT HEX TARGET	NON-PORT HEX ADJ	PORT HEX ADJACENT
0	0	0	0	0
1	0	1	0	0
2	1	8	0	2
3	8	27	2	6
4	27	64	6	16
5	64	125	16	31

3. Add to the AV total a value for the weather in the invaded hex:

Clear 0
 Light Rain 4
 Heavy Rain 16
 Cold 36
 Snowfall 64
 Blizzard 100

4. This total is the AIAV value.

Once the AIAV is calculated, each troop and cargo ship carrying the invasion forces checks and if $\text{rnd}(100) < \text{rnd}(\text{AIAV})$ then the ship is considered sunk and removed from the game. The percentage of troop ships hit is then used to destroy ground elements being carried by the ships (so if 10% of the ships are hit, there's a 10% chance that each element will be destroyed). The percentage of cargo ships hit is used to damage squads, with each surviving element remaining after transport losses having a chance to be damaged based on the percent of cargo ships in the force that are hit.

Once this is done, then the number of ships hit is then used in conjunction with the prep points of the invading units to determine additional amphibious attrition on the surviving ground elements as follows:

1. Calculate the value of X as follows: $X = 100 - \text{number of ships hit}$ (use 90 instead of 100 if the unit is not an infantry type unit).
2. Calculate the value of D as follows: $D = 90000 / (1500 + (\text{prep points} * \text{prep points} * 16500 / 8100))$

Note:

This leads to the following values of D based on prep points:

PPs - D

30 - - - 27

40 - - - 18.9

50 - - - 13.7

60 - - - 10.2

70 - - - 7.8

80 - - - 6.2

90 - - - 5

3. For each element in the invading unit, if $\text{Die}(X) < D$ then the element is damaged. So, if 5 ships are hit, and the player has the max 90 prep points, an element is damaged if $\text{Die}(95) < 5$ (a 4/95 or 4.2% chance).

V1.00.07 - 19 December 2014

Rule Change - When calculating the coastal defense value for amphibious attrition (step 2 of 16.7.1) for amphibious HQs at sea (16.6.2.2), ferry hexes are treated as if the coastal defense is in the target of an invasion (i.e. causing more damage to the unit at sea due to the restricted waters).

16.7.2. COMMANDO AMPHIBIOUS LANDINGS

Prior to any amphibious landing coming ashore, if there is a Commando, Ranger or SSF multi-role unit that is attached to the amphibious HQ, the unit will check to see if it will make a landing. These units will land in any unoccupied coastal hex that is adjacent to the amphibious target hex as long as the hex is not the target of another amphibious invasion. Only one unit will come ashore in each hex, but if there are two eligible Special Forces units in the HQ, then up to two hexes may be invaded by these Special Forces. Commando, Ranger and SSF units are the only units that may report directly to an Amphibious HQ (as long as they can trace a land path to the Amphibious HQ) and the only unit that can be attached directly to an Amphibious HQ (other than the naval support groups).

16.7.3. AMPHIBIOUS LANDING AND ASSAULT

If a target hex is occupied by an enemy combat unit(s) then the amphibious combat units must fight their way ashore with a deliberate attack. Naval support groups attached to the amphibious HQ will contribute fire support. Amphibious landings take part during 2 phases. In the first phase, any commando landings and amphibious landings targeting hexes unoccupied by enemy units will come ashore. In the second phase, landings targeting hexes containing enemy units will come ashore one landing at a time in a randomly determined order. When an opposed amphibious landing results in a combat, the defender's combat value is divided by a number equal to one plus the number of adjacent land hexes that are controlled by the attacking side. So if there were two adjacent hexes controlled by Allied airborne units, one hex controlled by an adjacent commando unit, and one hex controlled by a force from an invasion that just successfully came ashore, the defending force would have its CV divided by 5 (1+4) when determining the final combat odds. With the exception of naval support groups attached to the amphibious HQ unit, support units in HQ units will not participate in amphibious landing combat,

During an amphibious invasion attack against a non-port hex, the defending units may only use the CV value of the largest unit in the hex, and if that unit is a larger than a regiment or brigade, it will only use 1/3 of that unit's CV value. All units will participate in the battle, but only the one unit will count in the after battle CV value that determines the winner of the battle. Axis units next to enemy amphibious HQ units are not eligible to come in to a battle from reserve.

If an amphibious assault fails, the ground units will remain 'on ships' in the same water hex with the amphibious HQ unit, representing the evacuation of the surviving assault forces back to the transport ships. All prep points are lost.

Amphibious HQ units will use their naval support units to fire into any combat where the defender in the combat is adjacent to the Amphibious HQ (they will fire as an attacker or defender, as long as they are adjacent to the defender's hex). Naval support units suffer disruption prior to their firing in combat when adjacent to enemy hexes with forts and/or ports. The amount of disruption is determined by adding up the fort levels of every enemy hex adjacent to the Amphibious HQ, and adding 1 for every enemy port adjacent to the Amphibious HQ. The larger this number, the greater the disruption. This represents the effects of enemy naval guns within range of the Amphibious HQ.

At the end of every Western Allied player turn air execution phase, each amphibious HQ unit will automatically bombard all adjacent Axis ground units potentially causing damage to some Axis ground elements in both the combat units and any attached support units.

16.7.4. TEMPORARY PORTS AND AIRFIELDS AND HOLD AT ALL COSTS DEFENSE

If an amphibious operation succeeds in capturing the target hex then a temporary port with a level 2 depot set to priority 4 will automatically be formed in that hex. When a temp depot is created during an invasion, 250 tons of freight will be placed in the temp depot for every cargo ship attached to the amphibious force being landed. In addition, an airfield with 50 damage will be created in the hex if it is clear or bocage terrain and freight from attached cargo ships will also be used to fill out the airbase units TOE (8.2.1). Units ashore may draw supply through friendly temporary ports. Temporary ports may be used for strategic naval movement, but not for accumulation of preparation points for amphibious invasion. Temporary ports and associated depots cannot be manually disbanded by the player, but will be removed from play during any supply phase where they are not occupied by or adjacent to an amphibious HQ (any airbase will remain). Defending units on a temporary port hex, or adjacent to a temporary port hex and also adjacent to a sea hex, will have their end of combat CVs multiplied by 4 when determining whether they retreat. If they hold, but would have retreated had they not received this bonus, they will instead suffer additional losses to reflect their fighting to the last to hold the beachhead. The existence of a temporary port is noted in the hex pop-up information.

V1.00.13 – 26 January 2015

Previously Undocumented Rule – Temporary ports are considered to be national supply sources for the purposes of determining isolation.

V1.00.21 – 18 February 2015

Newly created airfield units and those created in temp ports are now given a supply priority of 3 when they are created (used to be set to supply priority 0).

16.7.4.1. TEMPORARY PORT FREIGHT ATTRITION

Freight coming ashore to a temporary port takes attrition based on the air weather value (Clear 0, Rain 1, Heavy Rain 2, Cold 3, Snowfall 4, Blizzard 5) and the following formula:

$$10 + (\text{weather value} * 15) \%$$

So in rain, 25% of the freight shipped to the depot will be lost.

16.7.5. FERRY HEX AMPHIBIOUS ASSAULT

The only time a unit may attack from a ferry hex is if the ferry hex contains a friendly amphibious HQ. In this case ground units may move from adjacent land hexes and stop on top of the amphibious HQ and attack an adjacent enemy land hex. Units that fail an attack from a ferry hex will retreat back to a land hex.

16.8. MULBERRY HARBORS

The Allied player may create up to 2 Mulberry Harbors in temporary ports during the game, beginning in May 1944. To create a Mulberry, go to the city detail window for the temporary port and select 'Build Mulberry'. The number of remaining available Mulberries that may be built is shown in parentheses. A Mulberry creates a level 4 port in the hex that is no longer considered a temporary port, so it will not suffer over the beaches attrition (16.7.4.1). Mulberry Ports may only be built in a hex if the air weather in the hex is clear. A Mulberry may be destroyed. Each turn, the per cent chance of destruction is based on the air weather value x 1 percent (value below):

Clear 0

Rain 1

Heavy Rain 2

Cold 3

Snowfall 4

Blizzard 5

If a Mulberry is destroyed, the hex reverts to a temporary port if the hex is still adjacent to an amphibious HQ unit.

If a Mulberry is captured by the Axis player, it will remain in the hex, but any depot in the same hex will be captured and destroyed (15.14).

17. AIR POWER

The purpose of this section is to provide an overview of air power and the game rules governing its use in Gary Grigsby's War in the West. As detailed in section 8.0, air power in Gary Grigsby's War in the West is represented by aircraft, pilots and aircrew

organized into air group units that are assigned to and operate from fixed air base units (airfields) consisting of air support and anti-aircraft support elements. From a command and control perspective air base units are special air headquarters units (type 5) that are in turn assigned to Corps (type 4) and/or Air Force (type 3) level air headquarters units that then in turn report to higher level regional or national air headquarters units (type 2) and finally high command headquarters units (type 1).

Air group units in Gary Grigsby's War in the West can conduct a variety of missions executed by the computer, most of which are generated by player and/or computer generated Air Directives. Air Directives are the general orders given to an Air Force. Sections 5.3 and 5.4 provide detailed instructions on using the interface to plan, create, and modify Air Directives. While the creation and editing of Air Directives takes place during the aptly named Air Planning phase, missions are flown during the Air Execution phase and in limited cases during the action (move) phase. The impact of these missions can be felt throughout the turn. Air group units can be assigned to Air Directives for ground support, ground attack and interdiction, strategic (city) bombing, strategic and tactical air reconnaissance, air superiority and naval patrols for sea control and interdiction during the air planning phase. Ground support missions are conducted during the action phase during individual combats. The other missions are conducted during the air execution phase, with the effects of air superiority, interdiction, recon, and sea control lasting through the entire turn. In addition to air superiority, the computer can scramble fighter air group units to intercept enemy air missions throughout the turn. Eligible anti-aircraft units will also fire on enemy air missions.

The transport or airdrop of supplies and combat units by air is normally conducted during the action phase by the player. The exception is the airdrop of combat units (airborne assault) in support of an amphibious invasion that is ordered by the player during the action phase, but conducted directly after the enemy logistics phase. The player can transfer eligible air group units between air base units during either the air planning or action phase.

The AI Move Air Units (hotkey shift-a) function can also be used to transfer and reorganize multiple air group units by the computer. For the Western Allies, the AI will generally try to move air forces forward along with the progress of the ground units (especially tactical air forces), while the for the Axis, the AI will generally try to move their air forces back as the Western Allies advance. This function is not recommended unless you intend to use this almost exclusively to handle placement of your air units.

The majority of air missions are implemented under air directives, the exceptions being interception, some naval patrols (in addition the player can assign naval patrol air directives to specific air groups), air transport and air transfers. During the air planning phase, air group units are assigned to type 3 and 4 air HQs, and those air HQs are given air directives that determine what mission those air group units will fly during the turn. The player can influence the process by directly issuing air directives to air HQs, or by setting general priorities and letting the AI generate the air directives through the automatic air directive creation screen (hotkey a). If the latter, the player has the option of tailoring those directives and the resulting air missions. In addition, various general mission parameters can be set for each air directive through the air doctrine screens (5.3.2). An air force (type 3 air HQ unit) or Flieger Corps (type 4 air HQ unit) attached to Luftflotte (type 3 air HQ unit) can each have a number of air directives assigned based on their leader's air and admin ratings (5.3.3). Once these are completed, the player presses Execute and air missions are resolved in a series of impulses that represent 7 days and 7 nights of fighting with an info window displayed showing activity. Each set of day and night impulses has an associated air maintenance segment for repairs, training flights and morale recovery for idle or resting air group units. Once the air phase is completed, the player is placed in the normal action phase. An Air Execution Phase summary window is displayed after the air phase is completed.

17.1. GENERAL AIR MISSION RULES

Air group units can conduct a variety of air missions depending on their type. Reconnaissance aircraft fly recon missions. Bombers fly strategic bombing, naval patrol, ground support, and ground attack/interdiction missions. Transports and level bombers fly transport missions. Fighters fly air superiority and interception and can provide escorts for other air missions. Fighter bombers can be set to fly either as fighters or bombers. Air group units can be set to day only, night only, or day and night operations. All air missions can be flown in daytime mode and some can be flown in night mode by air group units that have night missions enabled. Air group units may be able to fly multiple air missions during a turn as determined by the player or the AI when setting up and executing air directives, which is tracked by air group mileage flown and total mileage allowed per turn, which is based on the air group unit's size, morale, experience and aircraft cruising speed. Weather, air base unit fuel and ammo and mileage flown can impact the ability of both individual aircraft and entire air group units to participate in air missions. The air doctrine screen settings set various general mission parameters for each air headquarters for each type of air directive and determine what, if any, priority the computer will give to the various types of air missions. It also determines that percentage of ready aircraft an air group unit needs in order to participate in any mission. See the applicable sections of 5.3 and 5.4 for a description of the mechanics of using the game interface to conduct each type of mission. All air group units can be set to fly training missions or rest, which means the air group unit will not fly at all.

V1.00.44 – 9 June 2015

Formula Adjustment - Reduced the effectiveness of organic (under the hood) airfield radar on intercepts in Africa. It should be harder to effectively intercept raids in Africa due to less developed air defense systems in Africa.

Formula Adjustment - Improved air mission range calculation in F1 and F9 modes.

V1.01.31 – 9 April 2016

Changes to air game:

- a. Increased high altitude fatigue gain.
- b. Reduced flight altitude evade on very high altitudes.
- c. Adjusted air flight altitude impact on air combat.
- d. Adjusted flak code.

17.1.1. AIR GROUP UNIT MILES FLOWN

There are several factors that determine how many missions and what type a particular air group unit can conduct during a turn. An air group unit can only fly a certain number of miles per turn based on its cruise speed (5.4.18) and current unit morale and experience. The miles flown is tracked and displayed in the air base unit detail window (5.4.17) in parentheses next to the air group unit name as both actual miles flown and percentage of available miles flown. An air group unit can continue to fly missions if miles travelled are less than cruise speed times the number of aircraft in the air group unit times $(10 + (\text{morale}/4) + (\text{experience}/4))$. For example, a 10 plane JU-52 air group unit with morale of 20, experience of 40, and a cruise speed of 160 could fly up to 40000 miles in a turn. The actual mileage flown is based on the type of air mission. Air transfer missions pay the range in miles, transport missions cost three times the range in miles, and all other air missions, which are considered combat missions and include fighter escort of air transport missions, pay four times the range in miles. For example, an air transport mission to a target hex 12 hexes away would expend 360 miles per plane that flew on the mission, or 12 times 3 times 10 miles per hex per plane, for the transport air group unit, but an escorting fighter unit would expend 480 miles per plane. Note that a reduction in the number of ready aircraft during the turn will result in a reduction of available miles. The miles flown logged by a group is increased substantially when operating in bad weather.

V1.01.12 – 6 November 2015

Increased air group mileage usage when flying over 25K (by 10% each 1000ft up to 100%)

17.1.2. INDIVIDUAL AIRCRAFT ABORT AND OPERATIONAL LOSSES

There are many factors that impact how many aircraft from an air group unit will actually fly on a particular mission. Missions where fewer than 100 percent of an air group unit's ready aircraft participate will be common occurrences. Air group units conducting their first mission of the turn will have a higher probability of having all their ready aircraft participate. The mileage flown by an air group unit will be modified based on the number of ready aircraft in the air group unit that actually flew the air mission. Individual aircraft may also become damaged or destroyed (operational loss) during the course of a turn based on factors to include aircraft reliability (9.6).

V1.00.00 – 21 November 2014

Aircraft flying under 5000 feet can suffer additional op losses, with the lower they fly the greater the op losses. Extremely high experience pilots can avoid most/all of the extra op losses. Note: Night missions already have higher op losses to account for night flying risk.

17.1.3. AIR MISSION STAGING BASES

With the exception of air transfer and automatic air interception missions, all air missions, to include automatic interdiction and ground support, will have a player or computer selected staging base. This is an air base unit that all air group units participating in the air mission will rendezvous above before heading to the target hex of the air mission. The miles flown by an air group unit will be calculated from its original air base unit to the chosen staging base and then to the target hex, with the return from the target hex being determined in the same manner. For air directives that allow the player to manually change the staging base, the computer will select a staging base each time the player changes the target hex. Selecting the S BASE link after the target hex has been set will allow the player to go to the map and select another staging base, which must be a hex with a friendly airfield present.

17.1.4. GRAPHICAL DEPICTION OF AIR MISSIONS

The air directive command name is not included on the last 2 zoom levels of the target box depiction. When viewing the target box on the map, or viewing the path of a strike during air directive creation, lavender in a hex in the target box (or along the path) means coverage by the strike planes (bombers, recon or fighters in Air Superiority {AS}). Green hexes means the strike has fighter escorts that can reach the hex. Since AS doesn't include escorts these hexes won't be green Air group range circles are shown on the map for air groups. The maximum escort range is teal green and displayed only for fighters and fighter bombers set to fly fighter missions. The combat range is purple. Combat range is the distance that aircraft can fly on non-escort missions based on their load out (interception can go out this far too, although there's a low chance of interception at longer ranges). Air group units

assigned escort missions can only fly out to escort range, not combat range. This represents that escorting aircraft must zig zag when escorting bombers and can't travel their max range with the bombers. Transfer range is black. The various ranges will display when the air group unit is selected with air transfer mode (F10) enabled.

Example for P-51D w/ 2x 108/110 USG Drop Tanks:

Black Line: Transfer range is 2240 miles (it is equal to the maximum range the aircraft with particular endurance can travel)

Purple Line: Combat range $2240/3=746$ miles

Escort range is $2240/4=560$ miles – green line

The execution of air missions is graphically depicted on the map using lines with the following colors:

Black – Air group units flying to staging base (not shown during air execution phase)

Red – Air Strike flying from staging base to target

Green – Enemy air group units flying to target for interception

17.1.5. AIR MISSIONS AND WEATHER IMPACT

Weather conditions are based on the weather enroute to the target and over the take off base, stage base and target. The weather can be very poor, poor, fair, good, or excellent. Whenever an air mission is attempted in bad weather, there is a chance it will be scrubbed and not take place, with the chance of scrubbed missions increasing the worse the weather (22.2.1). Ground Support air missions will be significantly reduced during bad weather. As with all air missions, the mileage flown will be modified based on the number of ready aircraft in the air group unit that actually flew, but a weather mileage extra charge will apply, with the worse the weather the greater the extra miles charged against each aircraft that flew. Air missions can be cancelled by the minimum weather conditions set for the air directive. For example, if the minimum weather conditions for a directive are set to fair, then any mission being created by the air directive will automatically be cancelled if the weather condition is deemed to be very poor or poor at the time the mission would have flown.

V1.00.21 – 18 February 2015

Increased influence of bad weather on naval interdiction.

17.1.6. DAY AND NIGHT MISSIONS

Most air missions are conducted during daylight; however, strategic bombing, ground attack, air transport, and interception air missions can be flown at night by air group units that have night missions enabled in their detail window (26.3).

Air group units are generally defaulted to day&night mission settings which allow them to fly in both day and night missions, although night fighters are generally defaulted to the night only mission setting.

All night interception is conducted automatically as there are no night AS flights.

Air group units set to night only missions will not be fly automatic naval patrol missions.

17.1.7. REST AND TRAINING

Air group units can be set for either training or rest missions. Rest means the unit does not fly at all, allowing for increased morale recovery. Training means that the pilots fly training missions under certain conditions (8.2.1). The mission setting may be changed on the CR screen (individually or in bulk using the mission setting function) or on the unit detail screen for the group. In the CR screen air groups in rest have their names in pink, while those training have their names in yellow.

17.1.8. FIGHTER BOMBERS

Fighter Bombers (FB) can be assigned to fly either Fighter Missions or Bomber Missions in the air group unit detail window by selecting the Mission text. The setting determines whether they are available for escort duty or to bomb targets. The air group unit detail window lists whether the unit is trained as a Fighter or Bomber unit. Fighter bomber air groups trained as fighters will bomb at 80% net effectiveness. Fighter bomber air groups trained as bombers will dogfight with opposing fighters (and fighter-bombers without bombs) as if they had only 80% of their normal experience. A player can retrain an air group unit by selecting the air group detail screen training type. This will take the unit off the map for 8 turns and when it returns, it will be switched from fighter to bomber or vice versa. For example, a FB air group unit trained as a fighter will bomb at 80 percent effectiveness and dogfight at full experience level. If that air group unit was retrained as a bomber, when it returned it would bomb at full effectiveness and dogfight at 80 percent experience level.

Fighter bombers will dive down to conduct attacks at 1000 feet altitude if their mission altitude is set at 5000 and above. Fighter bombers can only be assigned as escorts for strategic bombing missions. They cannot bomb strategic targets. Fighter bomber groups that are set to fly in the fighter role, have a – F after their number of aircraft in the right side bar during the air phase when setting air directives, as well as in the type column on the Commander's Report screen. A Fighter Bomber unit that is set to fly missions opposite of their training will have an asterisk in these locations as follows: FB* (unit trained as fighter set to bomb) or FB-F* (unit trained as bomber set to fly as a fighter).

17.1.9. AIRCRAFT LOADOUTS

Initially the computer will try to select a load out with no drop tanks or with maximum bomb effect. If the destination is not reachable, load outs with drop tanks or fewer bombs will be used instead. Fighter aircraft carrying drop tanks will automatically drop them once they have been used up during the mission. Bomb carrying aircraft will drop their drop tanks at the same time

they drop their bombs. Fighters and Fighter Bombers carrying drop tanks and/or bombs will fight less effectively if engaged in air to air combat by enemy interceptors. In such a situation, there is a chance that some of the aircraft will prematurely drop bombs and/or drop tanks to more effectively engage the enemy interceptors. When the setting is Auto it can select various load outs depending on the plane type and situation. For example, if the air base is below 50 percent of its fuel need it will choose a load out with minimal sortie fuel value. In case of naval patrol it will try to pick torpedo/mines/bomb. The selection algorithm also goes into two stages. For example for the bombers, first it selects the heaviest bomb load (w/ heaviest total blast value). If the modified endurance doesn't allow the aircraft to reach the target it picks the bomb load with the least possible endurance mod.

Aircraft have many possible load outs. Load outs with a lot of smaller bombs allow the aircraft to hit more ground elements in units. For targeting cities, heavier bombs are more effective. Aircraft flying with torpedoes get a bonus when generating naval interdiction during naval patrols. Depending on the fuel situation at an airbase, an air group may not select drop tanks, thus greatly reducing combat radius. One solution may be to shrink the area that the mission is covering, as this will effectively reduce the range.

The player has the ability to manually change air group unit load outs, either individually or by various groupings of multiple air group units of the same model aircraft (8.1.7).

V1.00.21 – 18 February 2015

17. Improved automatic load out selection for the naval patrol strikes.

V1.00.37 – 7 May 2015

Formula Adjustment - Removed camera device modifier when calculating default load values.

17.1.10. AIRCREW LOSSES

Aircrews of destroyed planes are counted as KIA and/or captured, counting in the losses screen as permanent losses. When replacement aircraft are assigned to units, manpower is deducted from the manpower pool to fill the crew. Phasing player aircraft destroyed will have 90percent of the crew destroyed and 10 percent captured. Non-phasing player aircraft will have 100 percent of their crew KIA. These casualties count for victory point totals as they are treated no differently than other permanent losses.

17.2. AIR MISSION SEQUENCE

The following illustrates the general flow of events during the conduct of an air mission:

A. Air Mission sub-phase

1. Phasing player Air Group units committed for [mission]
2. Phasing player Air Group units rendezvous at staging base and then fly to target hex
3. Non-phasing player Air Group units committed for air intercept resulting in air to air combat (missions can be intercepted enroute to target or on return and can be intercepted multiple times)
4. Anti-Aircraft Defense (any accumulated AA from flak flown over is resolved prior to each air combat, bombing of target and landing of the mission).
5. Air to Ground combat in target hex or transports deliver cargo
6. Phasing player Air Group units return to staging base and then fly independently back to air base unit

Only fighters and fighter-bombers flying escort will drop the tanks when they have used them up during flight as a/c with bombs and drop tanks cannot drop one without dropping the other (so they keep the drop tanks until they drop the bombs). Fighter-bombers that are bombing may jettison their bombs and drop tanks and switch to "sweep" which simply means they are becoming fighters trying to fight in A2A going after enemy fighters. This allows those fighters and fighter bombers to engage enemy interceptors at full effect.

Air groups are broken down into smaller "flights" to resolve air missions, to include air to air combat and bombing runs. Decision by fighters or fighter bombers to drop their drop tanks/bombs is made by flight. These flights can consist of 4-12 aircraft. So one part of an air group unit can switch to sweep while another keeps their drop tanks and press on with their escort mission or, for fighter bombers, to bomb the target.

17.2.1. AIR TO AIR COMBAT

In general, escorting fighter air group units broken down into flights will attempt to engage intercepting fighter air group units broken down into flights and keep them away from the recon, bomber or transport aircraft conducting the air mission. The goal of intercepting fighter aircraft will normally be to engage the mission aircraft, though they may have to fight their way through the escorting fighter aircraft to do so. Escorts can receive an altitude advantage when engaging intercepting fighters. Air group unit's flights from both sides that suffer losses may break off and return to their air base unit during air to air combat.

The aircraft in air group unit flights will engage in combat with each other using their equipped devices such as machine guns, cannon, and air to air rockets. The ability to hit will depend on the aircraft devices and characteristics such as maximum speed, climb rate, and manoeuvre, as well as the pilot experience and fatigue. Aircraft that are hit may be damaged or destroyed, depending on the lethality of the attacker's fire and the defending aircraft's armour and durability rating. Fighter versus bomber combat will be more lethal to the bombers.

A Fighter air group unit's ability to engage other air group units will decrease based on the distance flown (in hexes) relative to their range, which is calculated as aircraft radius divided by ten, resulting in fewer enemy aircraft being damaged or destroyed during a lengthy mission.

V1.01.37 – 25 May 2016

Formula Adjustment - Slightly reduced night air combat intensity.

17.2.2. ANTI-AIRCRAFT DEFENSE

All enemy units that are flown over during an air mission will attempt to engage the air group units with their anti-aircraft ground elements and any anti-aircraft support units. AA units in cities/airfields will fire at aircraft flying in adjacent hexes if they are 15000 feet or higher, while units will fire into adjacent hexes if the enemy aircraft is 10000 feet or higher. Fire at adjacent hexes has much less effect than fire at aircraft flying directly overhead. For all air missions AA units in the target hex are much more effective. AA units attached directly to cities or airfields (including flak intrinsic to the airfield unit) are more effective, as are self-propelled flak units. These are cumulative benefits, so a self-propelled flak unit in a city that is in the target hex will receive benefits from all three conditions. Flak against air transport and airborne missions is more severe in daytime than at night.

Anti-aircraft guns have two range bands, effective ceiling and maximum ceiling, which is generally 1.4 times the effective ceiling. Fire is allowed up to the maximum ceiling, but any fire above the effective ceiling will be considerably weaker.

When determining the effectiveness of flak, aircraft speed is more important to aircraft flying at lower altitudes. At higher altitudes the effectiveness of flak is most impacted by the altitude itself (i.e. higher is better to avoid being hit by flak).

As aircraft fly along their path on a mission, the flak they fly over accumulates until an air battle or a bombing/recon occurs. At this point, all the flak they have flown over fires at the aircraft before the air battle or bombing/recon takes place (and all of the flak is listed as participating in this battle). If no battle takes place on the way home, any flak flown over and the losses caused by this prior to landing are retroactively placed into the last battle site report that had been created by the mission.

The hotkey Shift-O displays the relative intensity of anti-aircraft (Flak) values by toggling no values, values in cities only, and values in cities and units. Numbers displayed are between 0 and 9 to indicate intensity of flak, with the left number being low/mid altitude (below 20k feet) and the right number being high altitude (above 20K). With FOW enabled, the accuracy of the flak values will vary depending on the detection level of the AA support units (13).

V1.00.00 – 21 November 2014

Barrage Balloons – All ports are assumed to have barrage balloons that will impact any raid that is bombing anything in the port's hex. Aircraft bombing under 3000 feet have a chance of being destroyed by the barrage balloon equal to two times the size of the port (port 3 means 6% chance bombing aircraft will be destroyed). For night missions, the percentage chance is tripled (so port level 3 has an 18% chance of destruction).

V1.00.07 – 19 December 2014

Made medium/heavy flak fire more effective at higher altitudes

V1.00.37 – 7 May 2015

Formula Adjustment - Added extra flight disruption when damaged by flak fire.

V1.01.01 – 30 September 2015

Rule Correction/Clarification – During the air execution phase, flak support units attached directly to HQs will act as if they are in the HQs hex for firing at air units (i.e. they will only fire at units that fly over or in some circumstances adjacent to the HQs hex). When they commit to a ground combat, support flak units in HQs will fire at enemy ground support aircraft (they will also participate in the ground combat and their CV will be included).

17.2.3. AIR TO GROUND COMBAT

Bombers and fighter bombers that survive air to air and anti-aircraft fire will attempt to use their equipped bombs and rockets to hit targets in the hex they are attacking. The target and the effect of a hit is dependent on the type of air mission being conducted (16.3). Tactical bombers and fighter bombers with a mission altitude of 5000 feet or greater will fly to and from the target at their mission altitude and dive down and conduct air to ground combat at an altitude of 1000 feet. Aircraft conducting air to ground combat in this manner will be subject to additional anti-aircraft fire at 1000 feet altitude.

17.3. AIR MISSIONS

17.3.1. AIR RECONNAISSANCE

Air recon missions are conducted to raise the detection level of on-map enemy units and their attached support units in ground hexes along the flight path and in the air recon target hex (and if above 10000 feet in hexes adjacent to the target hex), to include

spotting enemy units that were previously undetected when Fog of War (FOW) is enabled (13.2). Air reconnaissance does not take place over water hexes, but naval interdiction does act in the same manner as air recon for units that remained at sea at the end of their turn (13.1.2). Air group units conducting strategic recon only impact the factories in the hexes reconnoitred. Strategic recon will only target town, city and urban hexes while normal air recon can target any land hex based on the AD priorities and raises the Detection level of the hexes which in turn increases the DL of the units there, to include air base units. Strategic recon is used to improve the quality of the information on the damage level of enemy factories in cities in the target area.

For non-air base units, air reconnaissance can raise detection levels up to a maximum of four, depending on whether the unit is in clear or non-clear terrain. For air base units, air recon can raise detection levels up to a maximum of five. (13).

Air recon missions can only be conducted by recon type air group units, and can be escorted by fighter and fighter bomber air group units. Air recon missions cannot be conducted in friendly or pending friendly hexes.

Section 5.3.9 discusses details on using the interface to set up air reconnaissance air directives.

V1.01.01 – 30 September 2015

Added strategic recon display - You can now toggle the Show Recon button (shift-t) to either show ground recon values or strategic (city) recon values (or no recon info). When strategic recon is toggled on, rollover info will display factory info, and every enemy city hex on the map will be shaded based on the number of turns since the last strategic intel for the city (darker the hex, the longer it's been).

17.3.1.1. TARGET PRIORITY AND AIR RECON

The air recon target priorities are used to determine the targets selected for each mission. For example, if airfields are set to low and units set to medium, when a recon mission is formed and sent out, it picks its target hex, and there is a good chance it will pick units and a smaller chance it will pick airfields. If airfields were set to none and units to high, only hexes with units would be selected for targets, but the increase of recon values in the hexes flown over by the tactical recon flight would raise the detection levels of all units, to include air base units. For tactical recon, the recon values in the hexes go up along the flight path to the target hex, which should see the largest increase in recon value. Any of the target priorities can be selected; however, tactical recon will only increase the basic recon level of the hex, which only impacts the detection level of Units and Airbases. For example, railyards could be set as the target priority and the recon mission would fly to a railyard target hex, but the mission would still only increase recon values to raise the detection levels of units and airfields that the recon aircraft fly over during the mission.

NOTE

Selecting Interdiction as the target priority will result in the selection of hexes with lower movement point costs (clearer terrain) as the target hexes. This method is trying to blanket the area, but generally hitting the places that are easier to move through in order to slow movement. Also, remember that interdiction mission's puts interdiction in the target hex, but also some in the adjacent hexes. So it tends to fill an area more.

17.3.1.2. STRATEGIC RECON TARGET PRIORITY

For strategic recon, target priority is used to select the cities that will be strat recon based on the type of factories in the city. So if Oil is high, it will conduct strat recon missions against cities in the target area with Oil factories. If a city is selected for strategic recon based on the target priority, all factories in that city will be equally photographed.

17.3.1.3. ALTITUDE AND AIR RECON

Air Doctrine altitude settings will impact the effectiveness of air recon missions. If the altitude is less or equal to 10k feet, recon will only be conducted, and recon values increased, only in the actual hexes of the recon flight path. If the altitude is greater than 10k feet, then recon will be conducted in hexes adjacent to the flight path as well. Recon aircraft have two different camera load outs () for low and high altitudes. The most effective altitude for the low camera load out is around 12k feet while the most effective altitude for the high camera load out is about 35k feet.

V1.00.13 – 26 January 2015

Air Recon - Air recon flights will automatically change their altitude in the target hex by up to 10000 feet in order to reach the most effective altitude for the camera device being used.

17.3.2. GROUND SUPPORT

Ground support missions are used to provide ground formations with direct air support during ground attacks. Air group

units assigned to this directive will fly during ground combat in support of ground units that are in the chain of command of the target HQ. An HQ can only have one air HQ unit set to provide it ground support. If an air HQ unit is assigned to support a ground HQ unit that already has one air HQ unit assigned, the new air directive will take effect and the older directive will be deleted. A ground HQ with an air HQ unit providing support will not receive ground support from another air HQ unit providing ground support to a higher ground HQ to which they are attached. Ground HQ units without direct support will receive ground support as available from air HQ units directly supporting ground HQ units to which they are attached. Section 5.3.6 discussed details on using the interface to set up air reconnaissance air directives.

Strategy Note - Ground support a/c are available to escort transport aircraft during the movement phase (unless they fly ground support first and use their air miles). So assigning some fighters to ground support is a good way to reserve escorts for air drops (if the fighters are left as part of other types of ADs that are set to Auto a/c involvement, the fighters will probably use up their miles flying these ADs before the move phase and be unavailable to escort the transports).

17.3.3. GROUND ATTACK AND INTERDICTION

Ground Attack and Interdiction missions are used to slow and interdict enemy ground movement through an area, as well as causing losses to enemy units and logistics systems. The type of target can be prioritized for any/all of the following: railways, port, rail yards, ferries, interdiction (general area), air base units, and ground units. Ground attack missions on hexes slow rail movement through the hex by adding usage to the rail in the hex (14.2.4). Air interdict values depend on weather, terrain and many other aspects. Air recon values can increase the effect of air interdiction in a hex. Interdiction missions are flown every day fairly equally, so the idea is that the interdiction created applies during the entire turn. Friendly controlled hexes can be interdicted in anticipation of enemy forces moving through those areas in the next player turn. Interdiction missions can be conducted against several types of targets, to include airbase units (Airfields), enemy ground units, ports, ferries, rail hexes, and railyard factories, which reduce rail transport capabilities. Interdict will cause general interdiction to be flown across the area. Ground attacks on railways, ports, railyards, and ferries will cause interdiction points to be accumulated in hexes in addition to the primary damage caused by bombing the railyard or port factories. These points will slow enemy movement, cause damage to enemy units moving through and in the hexes, and will cause enemy units extra disruption at the beginning of a normal ground combat. Note that selecting Interdiction as the target priority will result in the selection of hexes with lower movement point costs (clearer terrain) as the target hexes. This method will generally blanket the area, but tend to hit the locations that are easier to move through in order to slow movement. Ground attack missions place interdiction in the target hex, and to a lesser extent, in adjacent hexes.

Ground attack missions against ports can reduce the impact of naval interdiction projected from those ports. Ground attack of rail yards and interdiction in hexes with depots can result in damage and losses to ground element equipment such as guns. Ground attacks against on-map units can disrupt, damage, or destroy ground elements and reduce unit morale and ground element experience. Attacks on air base units (airfields) can damage the airfield and damage or destroy individual aircraft in attached air group units.

Section 5.3.7 discusses details on using the interface to set up ground support air directives.

The air drop of airborne units will result in additional interdiction added to the drop hex and adjacent hexes (15.7.3).

V1.00.00 - 21 November 2014

Added interdiction effect from ground attack - unit target. It is significantly less than the interdiction added by a "normal" interdiction mission. The losses by the unit and the interdiction created will be shown in the Air Summary screen and the battle detail screens.

If an air directive is set to bomb unit and not interdict, and no unit could be found, it will try to switch to air interdiction.

V1.00.37 - 7 May 2015

New Rule - Added chance for the extra flight disruption when aircraft gets damaged.

New Rule - Added extra damage effect to overloaded air fields that are bombed which increases with size of aircraft (engine number).

17.3.3.1 INTERDICTION VALUES

Ground attacks on rail hexes slow rail movement through the hex by their adding usage to the rail in the hex. During each logistics phase, accumulated friendly rail usage in each hex is reduced to the higher of either current rail usage divided by six or enemy air interdiction value (actual shown in hex pop-up) times 500, with the latter being maxed out at 45,000 rail usage.

Units moving tactically pay the following extra movement points to enter a hex based on the interdiction level displayed in the hex:

INTERDICTION LEVEL	MOTORIZED MP	NON-MOTORIZED MP
1	-	-

2	+1	-
3	+1	-
4	+1	-
5	+2	-
6	+2	+1
7	+2	+1
8	+3 (1)	+1
9	+3 (1)	+1

Note

(1) There is a +2 MP cap on the movement penalty per hex caused by air interdiction to motorized units moving in clear terrain.

Air interdiction points attack units marching and railing through interdicted hexes. Interdiction points in a hex will also disrupt enemy defending troops automatically at the start of any land attack on that hex, while interdiction in an enemy attacking unit's hex will disrupt the attacking troops. Interdiction points will damage freight moving to and from depots during the logistics phase.

The AI player will be affected by interdiction during normal movement, but the AI routine that moves units at the end of the turn to even out the front line will not be impacted by interdiction.

If the interdiction value in a hex exceeds the maximum of 99 that can be displayed, then units in that hex will take additional interdiction damage at the end of the air phase. In combat, units can take damage/disruption from enemy interdiction in their hex before the ground elements start engaging. Losses in combat are in the combat report, but the air phase losses only go into the total losses. Even when no aircraft are listed participating in a ground battle, interdiction in the hexes of combat can lead to there being losses due to air listed in the combat detail. These can be very significant, especially in elements disrupted. Creating high interdiction values in hexes you plan to attack can be a devastatingly effective tactic.

HQ units and attached support units can suffer damage from interdiction.

Interdiction values generated by airstrikes are modified by a certain percentage due to the number of hours of daylight based on the month as follows:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
% Modifer	-20	-10	0	+10	+20	+30	+20	+10	0	-10	-20	-30

17.3.4. STRATEGIC BOMBING (BOMB CITY)

Strategic bombing missions are used to inflict bomb damage on factories, to include production facilities, manpower, ports and railyards in towns, cities and urban hexes. Fighter bombers can only be assigned as escorts for strategic bombing missions. They cannot dive bomb strategic targets.

To simulate the impact of area bombing with the extensive use of incendiaries, strategic bombing of manpower factories can cause damage to other factories located in the same hex.

Strategic bombing of ports and railyards can reduce transportation tonnage capacity. Bombing missions against ports can reduce the impact of naval interdiction projected from those ports. Strategic bombing of rail yards in hexes with depots can cause freight damage, resulting in damage and losses to ground element equipment such as guns and losses of supplies.

Strategic recon is used to improve the quality of the information on the damage level of enemy factories in cities in the target area (17.3.1).

Section 5.3.8 discusses details on using the interface to set up strategic bombing air directives.

V1.00.00 – 21 November 2014

The Western Allies will never launch an air mission that is targeted against a non-German manpower target (even if an AD sets manpower as a target).

17.3.4.1. OBOE RADAR TARGETING SYSTEM

OBOE ground radar allows better night bombing of factory targets when bombing within 27 hexes of any of the following four locations 58,183 – 76, 182 – 87,180 – 90,170. This capability exists during for the entire game.

V1.00.29 – 19 March 2015

When "show factory" is toggled on or when setting bomb city air directives, hexes which are within OBOE range in air planning mode will be slightly shaded.

17.3.5. NAVAL PATROL AND NAVAL INTERDICTION

Naval patrol missions are used to project naval interdiction to exert control over ocean and sea water hexes. There are three ways in which air group units may fly naval patrol missions. First, air group units listed as naval only will automatically fly naval patrol missions from their air base unit and these groups may not be assigned to an air directive or change air HQ unit attachment. Second, air group units may fly naval patrols to an area under direction of an air directive to their Air HQ unit. Third, air group units not set to night only missions will automatically fly naval patrol if they are not assigned to any air directives and their HQ unit's air doctrine for Auto Patrol is set to yes. Naval only air group units are significantly more effective than other units at flying naval patrol. In all three cases, the bomber and patrol aircraft will attempt to create naval interdiction points in the target area (as well as along the path to the target) while fighters (including those flying air superiority missions) will attempt to prevent enemy aircraft from creating naval interdiction points. These naval interdiction points help to take control of sea hexes. When interdiction is shown, enemy controlled sea hexes are shown in red, neutral are shown darkened, and friendly control is shown normally. Naval air directives are flown during both friendly and enemy air execution phases.

All automatic naval patrol flights, whether bombers or fighters, are limited to 30 hexes from their air base unit.

Naval interdiction also acts as tactical air reconnaissance and can increase the detection level of enemy units utilizing naval and amphibious transport that remain in water hexes at the end of their turn (13.1.2).

If the player does not desire to have air group units not set to naval patrol only be automatically assigned to naval patrols for certain air HQ units, for example Bomber Command, the AutoPtrl air doctrine setting in the Naval Patrol tab can be set to 'No' to prevent the computer making such assignments (5.3.1). On the other hand, if the player desires specific additional naval patrols, they can manually set up a Naval Patrol directive aimed at a specific target area over water.

Section 5.3.11 discusses details on using the interface to set up naval patrol air directives.

V1.01.31 – 9 April 2016

Changes to Naval Interdiction missions:

- a. Reduced efficiency of non-naval air groups for NI
- b. Reduced efficiency of GP bombs for NI
- c. Increased efficiency of mines/torpedoes/ASW weapons for NI
- d. Improved automatic naval load out selection
- e. Made it easier to reach lower NI and harder higher NI values

17.3.5.1. NAVAL INTERDICTION VALUES

Naval Interdiction values printed in sea hexes are displayed in green for Allied and grey for Axis. Control of a water hex is defined as having a map display adjusted interdiction level that is 2 greater than the enemy level. The map displayed values are the true value that is a number from 0-99, divided by 10 and then truncated. The true values are displayed in the hex pop-up, but the values shown on the map are the truncated /10 values, and it is these that are used for determining naval control of a hex. Example: Allied has a real value of 32 (map value of 3) and the Axis player has a real value of 16 (map value of 1). Since the Map value of the Allies is 2 or more than the map value of the Axis, the Allies have control of the hex. When interdiction is shown, enemy controlled sea hexes are shown in red, neutral are shown darkened, and friendly control is shown normally. The hex pop up will display current control as follows:

Hex control will be indicated by Axis, WA (Western Allies), or Neutral, which indicates contested water hexes.

In the Action (Move) phase, if naval transport (F3) or amphibious transport (F4) mode is selected, then the impact of control of sea hexes on those modes of travel will be indicated as follows:

Friendly controlled – nothing displayed

Neutral – SHIPPING CONTESTED

Enemy controlled – SHIPPING HEAVILY CONTESTED

Enemy amphibious HQ unit and adjacent hexes – SHIPPING PROHIBITED

In addition to the effect of naval air patrols, naval interdiction points are automatically projected from ports. Every port projects naval interdiction points approximately five to seven hexes out based on the port level, damage level, and weather. Allied ports project twice the level of interdiction as Axis ports. Ports within 5-7 hexes of each other will aggregate interdiction levels. In scenarios where an invasion is ready to be ordered on the first turn, the ports near the invasion hexes will generally start damaged to reflect a concentrated bombing campaign to suppress naval defenses.

STRATEGY NOTE

It is very important to damage ports that are near to invasion hexes through strategic bombing and ground attack missions in the turns prior to an invasion. Selecting Amphibious Support during Automatic Air Directive creation the turn the invasion is ordered will target the ports, but this is too late in the process and could likely result in

high losses to the invading forces. Since strategic bombing missions tend to fly only a few days a week, while ground attack missions tend to be flown every day (based on air doctrines), if you want to damage the ports quickly, use ground attack missions.

V1.00.37 – 7 May 2015

New Rule - Naval interdiction can damage amphib HQs.

New Rule and Formula Adjustment - Increased interception effect of Amphib HQ. It will add naval interdiction. Both will be reduced when Amphib HQ gets damaged.

17.3.5.2. FIGHTER INTERCEPTS AND AMPHIBIOUS HQ NAVAL PATROLS

Fighters that are available for automatic intercepts of enemy air missions may intercept air group units flying naval patrol missions, and these intercepts will reduce the amount of naval interdiction produced by those air group units. In addition, Amphibious HQ units project fighter naval patrols into sea hexes within 2 hexes of the amphibious HQ unit, representing carrier based aircraft. These fighter naval patrols can lead to any naval air patrol missions (automatic or manual air directives) suffering aircraft losses. This will also tend to reduce enemy naval interdiction in the protected hexes. Aircraft lost because of these Amphibious HQ unit fighter naval air patrols will be counted as operational losses.

17.3.5.3. SKAGERRAK/KATTEGAT NAVAL INTERDICTION

To represent the significant naval defenses, to include mines, in the region bounded by Southern Norway, Western Sweden and Denmark, the Axis player will automatically have the maximum naval interdiction value of 99 in Skagerrak/Kattegat water sea hexes.

17.3.6. AIR SUPERIORITY

Air Superiority missions are used to gain control of the air so as to minimize enemy air interception of other friendly air missions while degrading the effectiveness of enemy air missions. Air superiority can impact the entire turn, with both sides capable of conducting missions during both player turns. Fighter units will fly to a target area and try to disrupt enemy missions that are flown into that area. Aircraft assigned air superiority missions can intercept enemy air activity both on the way to and in their target area. Air superiority missions can be used defensively to protect a target area, or offensively as a fighter sweep type mission. They are a good way to support an amphibious invasion through the setup of an air superiority directive with a target area that covers both land and water hexes in the vicinity of the landing area. Air superiority flights can gain altitude when intercepting enemy raids or joining defensive battles. AS missions fly during both friendly and enemy phases. The following is a brief overview of the air execution phase and how air superiority missions interact with other air missions:

1. Air execution starts.
2. Execute night air directives.
3. Execute day patrol flights.
 - a) Launch all AS directives, friendly and enemy.
Number of aircraft participating based on doctrine and target area settings.
Flights are generated with the flight path from the staging air base unit to the center of the target area.
AS flights can be intercepted on the way to the target area.
 - b) Resolve all AS combat.
If enemy has AS flights in the same target area, i.e. both friendly and enemy AS target areas have common hexes, enemy AS flights have a chance to engage friendly AS flights.
 - c) Resolve automatic naval patrols.
Existing AS flights which are still active contribute to the naval patrol calculations in the AS area with their fighter values.
4. Execute day air directives. As they run all still active AS flights that are still active can intercept and engage in air to air combat
 - a) Friendly air missions
 - b) Enemy intercepts (size determined by AS Mis Pct air doctrine setting)
5. Land all air superiority flights and repeat from step 2.

Air groups that are specifically assigned to an Air Superiority air directive, either by the computer or player manual air group unit selection (5.3.4), will have a better chance of flying interception missions during the enemy movement phase in the target area of the air superiority air directive. This allows them to intercept enemy Ground Support and Transport missions. This is because the miles they flew for air superiority missions in the friendly air execution phase are tracked, and these miles are available to be used in the enemy movement phase for these interceptions. This takes into account the simultaneous nature of real life air missions against the IGO/UGO nature of the game. It is assumed that the air group units were possibly out flying air superiority missions when the enemy ground support or transports came into the area. Air Group units flying air superiority missions under Auto assignment (5.3.10) do not have this dual phase capability and this capability is lost if the air directive is deleted, or if the air

group unit transfers to a different air base. No additional fuel or ammo will be expended for these movement phase intercepts as they were already “paid for” during the AS missions during the air phase. Section 5.3.10 discusses details on using the interface to set up air superiority air directives.

V1.01.01 – 30 September 2015

Changes made to the air game rules that are documented in the OnePageGuide 4b:

Added air phase toggle for air superiority and naval patrol ADs allowing ADs to be set to fly in either the friendly or enemy player air phase only, or in both.

17.3.7. AIR TRANSPORT OF FREIGHT

Air transport of freight is used to provide units freight either through an existing airfield or by air parachute drop. When air freight is air transported to a hex, if there is no depot in the hex, a temporary depot is created. Whether a temporary depot or an already existing depot receives the air transported freight, the instant an air transported shipment arrives in a hex, a special distribution takes place of freight from the depot in the hex. This special distribution is of supplies, fuel and ammo only (no replacements) and goes to units in the hex or adjacent to the hex. If there is already freight in the depot, then some of this freight may be distributed out along with the freight that was dropped. It is much more efficient to transport freight to a hex with an air base unit than to a hex with no airfield. If there is no airfield, it is better to drop in clear than in worse terrain. Temporary and isolated depots are not allowed to convert freight into vehicles from the pool. They are not allowed to distribute replacements during the logistics phase, but can replenish units in the pocket with them during the logistics phase using standard non-vehicle methods (20.4.1.1) as well as by using any vehicles already in the depot or vehicles requisitioned to the depot from units in the pocket. Temporary depots remain until the hex is linked to a supply source, at which point the temporary depot is disbanded (20.1.6).

Non-transport aircraft have their cargo capacity halved when performing air transport. In addition, all cargo capacity is halved when transporting to a non-airbase hex (i.e. parachuting supplies) and only 25-75 percent of the freight air-dropped will arrive in a non-airbase hex.

It costs one AP to assign a Level Bomber to an air transport mission (whether set to Single or Multiple Missions). Level bombers pay four times the normal miles flown when they fly air transport missions. The mission can be escorted by fighter air group units.

Section 5.4.5.1 discusses details on using the interface to conduct air transport of freight missions.

V1.00.37 – 7 May 2015

New Interface - Added a pop-up message when air transports are not able to fly freight due to a lack of nearby freight to carry. This will come up after transports are selected and the launch button is pressed. The message will appear instead of a combat window and will state: Not Allowed! – freight shortage at transport air bases. Freight must be either at the base, or able to be moved to the base from depots (using previously unused vehicles if needed).

17.3.8. AIR TRANSPORT OF UNITS

The air transport of units mission is used to transport a non-motorized unit between friendly air base units. Air group units must have 0 miles flown and not already be assigned to drop an airborne unit in the amphibious phase in order to air transport a unit. The air transport of units from a hex with a friendly air base unit to a hex with or adjacent to another friendly air base unit can be conducted only by transport air group units with aircraft that have a maximum load rating of at least 2000. There is a limit of two sorties that may be flown to conduct the transport mission, so if more than two sorties are required, the air transport of that unit is not possible. The mission can be escorted by fighter air group units. Any non-motorized unit may be transported, but only non-vehicle ground elements and smaller guns can be lifted. Any unit lifted will expend all of its MP's. The eligible unit must have at least one movement point remaining and be located in the same hex as an air base unit, which will be used as the staging base. When a non-motorized unit is air transported, those ground elements that are not allowed to be air transported will be transferred into combat units in or adjacent to the hex with the air base unit that the unit flew from. If there are no eligible combat units, then the ground elements will be transferred back to the production pool. Any vehicles and excess supply will be transferred to the air base unit that the unit was stacked with prior to being air transported.

Enemy interception of air transport missions can result in the damage or elimination of the non-motorized unit's ground elements. Aircraft conducting the air transport mission that are aborted will return the ground elements they are carrying to the staging air base unit where they will be transferred per the above procedure.

Section 5.4.5.2 discusses details on using the interface to conduct air transport of unit missions.

17.3.9. AIR DROPPING OF AIRBORNE COMBAT UNITS

This is a specialized air transport mission to air drop airborne combat units using parachutes and gliders. Like amphibious invasions, airborne combat units will require a number of turns of preparation after a target hex has been selected before they are eligible to execute the air drop. The air drop mission will be conducted only by transport air group units with aircraft that have a maximum load rating of at least 2000 (26.3.19). The mission can be escorted by fighter air group units, to include aircraft

assigned to ground support missions that have still have air miles remaining. The airdrop of airborne combat units has to be the first and only mission conducted by a transport air group unit in a turn. Once a transport air group unit has used miles for any other purpose, it will be unavailable for airdrop of airborne combat unit missions.

The airborne planning screen (hotkey Ctrl-a) displays the status of all airborne units (26.3.37), to include transport cost, drop hex if targeted and number of preparation points accumulated.

Divisions can be dropped as one unit. The transport cost of an airborne drop is equal to the normal cost less vehicles, less fuel, and then all divided by two to account for glider capacity. When an airborne unit is airdropped, those ground elements that are not allowed to be air dropped will be transferred into units in or adjacent to the hex with the air base unit that the unit flew from. These ground elements will first be given to other airborne units, then to any other combat unit. If there are no eligible combat units, then the ground elements will be transferred back to the production pool. Any vehicles and excess supply will be transferred to the airbase unit that the airborne unit was stacked with prior to being air dropped.

Enemy interception of air drop missions can result in the damage or elimination of the airborne unit's ground elements. Aircraft conducting the air drop mission that are aborted will return the ground elements they are carrying to the staging air base unit where they will be transferred per the above procedure.

Air drops are not allowed in mountain and impassable hexes, but are allowed in all other terrain. Airborne combat units being air dropped will suffer attrition during and after the drop depending on weather, day or night drop, terrain in the target hex and unit prep points and morale (15.7) Airborne combat units air dropped into the same hex as enemy units will conduct a special deliberate attack (15.7.2).

The air drop of airborne units will result in additional interdiction added to the drop hex and adjacent hexes (15.7.3).

Section 5.4.5.3 discusses details on using the interface to conduct the air drop of airborne combat units, including setting and changing the target hex using the 'target' button and executing the drop using the 'drop' button.

Airborne landings that are within 8 hexes of a supplied friendly unit (traced over land hexes) take place immediately upon executing the air drop. Airborne landings that are supporting an amphibious landing (i.e. don't qualify as being within 8 hexes of a supplied friendly unit but are within 1 hex of a hex that has an ordered amphibious invasion) are executed after the enemy player's logistic phase just prior to the execution of the amphibious invasion in the amphibious phase and will automatically be a night drop.

V1.00.07 – 19 December 2014

Rule Change - An airborne unit that drops and can't trace to a friendly hex is immediately considered isolated and will surrender if forced to retreat (in the past it would rout until it had gone through a friendly logistics phase and was judged isolated).

17.3.9.1 AIR DROP PREPARATION POINTS

Airborne combat units cannot conduct an air drop after the target hex has been selected until they have accumulated at least 50 prep points. If the target hex is changed, then one half of the prep points are lost (unless amphibious prep at scenario start is a non-zero number, in which case changes can be made on turn 1 with the unit retaining that number of prep points). Prep Points accrue in each friendly logistics phase equal to $(100 - \text{current prep points})/2$, with a minimum per turn gain of 20, and a max prep point value of 95. Attaching a support unit to an airborne unit preparing for an airborne drop will result in the loss of 10 preparation points, though prep points will never drop below zero. Airborne units must be on an airbase to set a target, and if in a logistics phase the unit is not in an airbase hex it will lose its target and all its prep points.

17.3.10. AIR GROUP UNIT TRANSFER

Air group units can be transferred between air base units, if within range. They can also be transferred from the off-map national air reserve (8.4). When in air transfer mode, the number of air groups is displayed on each airfield. Air groups may transfer at any time during a player's turn (air planning phase and movement phase). The air group must have enough miles travelled remaining in order to be eligible to transfer. If a unit has 0 current miles flown, then it may transfer to any friendly base regardless of distance. This may max out the air group's miles so it will be unable to do anything else during the current turn. When in air transfer mode, when you click on an airbase, the hex clicked on is in green, the HQ that controls the airbase is listed in the top window, and any hex with an airbase also controlled by that HQ is shown in blue. All other hexes with airbases are shown in olive green.

V1.00.44 – 9 June 2015

Added air transfer destination air base resupply code that is immediately activated when an air unit is transferred to an airbase:

- if air base is empty it will assign it to new air hq (based on max aircraft)
- if air base is empty it will try to swap air base nationality
- air base will be resupplied and air support transferred if there is some in the pool. No new air support will be built.

17.3.11. AI MOVE/MANAGE BUTTON

When this button is used, the computer will move units around the map to different airbases based on the situation. The Western

Allies will generally try to move air forces forward along with the progress of the ground units (especially tactical air forces), while the Axis will generally try to move their air forces back as the Western Allies advance. Generally this will result moving Allied units forward and Axis units backwards as the war progresses. It will also change the HQ attachment of some airbase units and attempt to expand some airbase units. For example, It always puts US 8th Air Force and UK Bomber Command in England, and the US 15th Air Force will go to Corsica/Sardinia or the Foggia area in Italy, depending on what is available. It will change the fighter/bomber setting for some Fighter Bomber groups. Once it is used, it is advisable to continue using it every turn (or at least every few turns). It is not advisable to attempt to use this while also making manual adjustments to airbase units or air group units. The computer will not create depots near air base units, so players using this to control their air forces need to periodically ensure that there are sufficient depots created close to active airbase units. One thing this feature will not do is withdraw air units from airbases that are threatened due to a sudden withdrawal of friendly ground forces. In cases where you are giving ground, you will need to manually transfer air groups from threatened airbases. Also, in order to save your airbase personnel and equipment, it is important to evacuate air units from airbases several turns before they are going to be captured. Airbase personnel are only returned to the manpower pool during the friendly logistics phase, so if the enemy is going to capture your airfield on their next turn, you have waited too long.

GAMEPLAY NOTE

The AI movement of air group units is designed for use by players that want limited interaction with the air game and plan on using this function often rather than transferring air group units manually. Once you use the AI movement function, the AI will do what it wants to do and will most likely disrupt anything the player is trying to do manually.

17.3.12. SYNERGIES OF DIFFERENT AIR MISSIONS

Ground attack (other than of units and airbases) results in area interdiction that disrupts and reduces MP's in units and damages freight (supplies) moving to and from depots, to include depots in permanent (city) and temporary ports (beachheads). Air recon can increase the impact of interdiction. Strategic (city) bombing and ground attack missions against ports lowers the effective port size, further reducing the flow of freight as well as impacting the amount of enemy naval interdiction being projected by that port. For blockading ports, friendly naval patrols can be powerful as a naval interdiction value of +2 or higher will result in the sea hex becoming friendly-controlled and the enemy being unable to trace supply through the hex. This tactic can be used to block ports from supplying troops and isolating units on islands (such as Sardinia or Corsica). Strategic bombing, ground attack and interdiction of rail yard hexes with depots can damage or destroy ground element equipment, to include equipment being sent to units as replacements.

17.4. AIR DOCTRINE

The air doctrine screen settings determine various general mission parameters for each air headquarters for each type of air directive, and what, if any, priority will be given to the various types of air missions by the computer. It also determines that percentage of ready aircraft an air group unit needs in order to participate in any mission. The percent required to fly setting is important, as air group units that do not meet the criteria will not be available even for manual selection by the player. Air Doctrine settings over 100 are allowed, although for percent required to fly, anything over 100 would mean no air group units would be available, resulting in no air missions of any kind being conducted. There is also a pilots tab used to determine the experience level below which pilots will train rather than participate in air missions other than train and rest. Details on the air doctrine interface and all the different settings can be found in section 5.3.2.

GAME PLAY NOTE

Between the number of aircraft in an air group unit and aborts due to reliability and other factors, the actual number of aircraft participating in a mission will seldom result in the exact ratios as set forth in the Air Doctrine settings.

v1.01.20 – 1 February 2016

Low level air HQs with no air doctrine entry will try to use higher HQ air doctrine.

17.5. DETERMINING WIN/LOSS FOR AIR MISSIONS

Victory and defeat for air leaders is judged based on losses in aircraft, and damaged, destroyed and disrupted ground elements. There is the possibility that no victor or loser will be declared if the loss differential is not significant.

18. AXIS ALLIES, GARRISONS, AND PARTISANS

Several nations fought with Germany during WWII. Italy, Rumania, Hungary, Slovakia and Finland are considered Axis allied nations. Units from these nations may be used by the Axis player. There are special rules to take into account the surrender of Italy.

The extensive resistance to Axis forces and supply lines that occurred in Axis occupied territory is simulated in the game by the loss of victory points and conduct of partisan attacks on rail hexes and factories if garrison requirements are not met in certain regions and cities. In addition, there are rules to simulate the historical French partisan uprising upon the liberation of Paris. There are no specific partisan units in WITW. Partisan and garrison rules only apply in campaign games.

18.1. ITALIAN SURRENDER

There are three cases under which an Italian surrender check will occur. On the turn an amphibious invasion of mainland Italy is executed, a surrender check is made during the Axis logistics phase. This "pre-invasion" check allows for the historical result in which the Italian surrender took place the night before the Salerno landings. In addition, during the Axis Logistics phase, if any hex in mainland Italy is under Western Allies control and in supply, Italy must check for surrender. Finally, if all of either Sardinia, Corsica, or Sicily is under Western Allies control, a modified surrender check is also made during the Axis logistics phase.

18.1.1. GERMAN GARRISON OF ITALY AND SURRENDER CHECKS

Under the first two cases above when surrender is checked, a value for the German garrison in Italy is calculated by adding up the basic (unmodified by weather) CV value of all the German units in mainland Italy that are not within 10 hexes of an Allied unit and dividing by four. In the third case involving Sardinia, Corsica or Sicily, the German garrison CV is not divided by 4. In all conditions, when the surrender check is made, if $\text{random}(200) > \text{garrison value}$, Italy surrenders.

V1.00.07 – 19 December 2014

Rule Change - Italy will never surrender prior to August 1943. In August 1943, the German garrison value in Italy is never divided by 4 when determining Italian surrender.

18.1.2. EFFECT OF ITALIAN SURRENDER

When Italy surrenders, all Italian units outside of Corsica and Sardinia and Italian units on Sardinia and Corsica stacked with a German unit are removed from the game. Italian units in Corsica and Sardinia not stacked with a German unit immediately become Western Allied Italian units and these units are set to withdraw in 5 turns, with the exception of Italian HQ units, which are removed from the game. WA Italian units set to withdraw will do so even if isolated. When Italian units switch to become WA Italian, they are automatically attached to the AFHQ HQ unit. Hexes containing a WA Allied Italian unit and those adjacent to a WA Allied Italian unit (unless occupied by a German unit) will become Allied controlled hexes. In the Allied logistics phase on the turn the Italians surrender, as well as every turn after that in which the below conditions are met, there is a chance that some hexes in Italy, Sardinia and Corsica will change to Allied control. Hexes with coordinates $X > 151$ and $Y > 253$ or hexes that are part of Corsica or Sardinia may change. German units in Italy or Corsica can prevent the switchover. All German units prevent a change in any hex that is within a number of hexes of the unit equal to $1 + (\text{unit CV} / 2)$. So a German unit with a CV of 9 would prevent a switchover in any hex within 5 hexes of the unit. Any hex that is not within range of a German unit has a 50 percent chance of switching to Allied control. In addition, when Italy surrenders, $\frac{1}{2}$ of the Axis transport ships assigned to the Mediterranean part of the map area will be permanently removed from the shipping pool (20.1.8).

V1.00.29 – 19 March 2015

When Italy surrenders and Italian airbases are changed to German nationality, their supply priorities were set to 0 and their Max TOE were set to 1. Now, they retain the setting they previously had.

18.1.3. ITALIAN REINFORCEMENTS

Italy will not receive any reinforcements prior to Italian surrender. The only Italian reinforcements that will appear in the game are units from both sides that historically arrived after the surrender. Each Italian and WA Italian reinforcement, ground and air, is

delayed a turn if Italy has not surrendered yet when the unit is scheduled to be brought into the game. This one turn delay will continue each turn until Italy has surrendered.

V1.00.21 – 18 February 2015

Italian reinforcements are now allowed prior to July 43. In the past they were not allowed until after Italy had surrendered.

18.2. AXIS GARRISON REQUIREMENTS

The Axis player must meet certain garrison requirements during the game. If these are not met during the Allied logistics phase, the Allied player can gain victory points (see victory rules), and partisan attacks on rail hexes and factories can occur. The greater the shortfall, the greater the partisan activity level. On the other hand, under certain conditions, if there are excess garrisons then the Allied player may lose victory points. Once the Allied player has combat units in any two of the garrison regions, the need for region and city garrisons (including security unit garrisons) ceases to exist. If any hexes in a garrison zone are Western Allies controlled the Axis garrison requirement is set to 0 in that garrison zone and no cities in that zone require a garrison of any kind. The partisan activity value is set to 10 and neither side will gain or lose victory points for garrison levels in this zone. If subsequently no Allied hexes are controlled in the zone, the garrison requirements will immediately return. Note that there are no Axis partisans, so there is no requirement for the Western Allies player to garrison captured Axis city and urban hexes. In non-campaign scenarios, the German values on the German garrison screen are zeroed out as no garrisons are required.

GAME PLAY INFO

To provide a better gaming experience, the Axis AI is not impacted by the garrison and partisan rules. It will try to meet garrison requirements, but we found it was too hard for the AI to manage the garrisons properly, while it does not take advantage of not having to play by the rules. No VPs will be scored due to the lack of or overabundance of garrisons when the AI is playing the Axis side.

V1.00.29 – 19 March 2015

Changes to Garrison rules:

- a. When Allied units are in two garrison zones and the Axis garrison requirement goes away, it will never return, even if the Allies are no longer in two zones.
- b. The two Channel Island hexes are no longer considered to be part of any garrison zone.
- c. The Netherlands garrison region now includes Netherlands hexes in columns in 112 and 113.

18.2.1. REGIONAL AND CITY GARRISON REQUIREMENTS

There are regional garrison requirements, and special city garrison requirements within some regions. The Garrison screen (hotkey Shift-j) shows the current requirement in combat value (CV) in each region and the current garrison (26.3.7). Only German non-fortified zone units count toward Axis garrison requirements; fortified zone and Italian unit CV's are not applicable. The garrison value is different from normal CVs in that there is no vehicle shortage penalty and no weather penalty when calculating the garrison value of a unit. Units on trains and ships have 0 CV. The map preferences unit counter info (hotkey z) can be set to show garrison CV's by selecting/toggling 'GarCV-MOVE'. Prior to the invasion of Northern Europe, cities must be garrisoned by one security unit and units totalling 10 CVs (including the security unit's CV). The Invasion of Northern Europe is defined as there being an Allied controlled hex in German Occupied Europe north of row 215. Once this condition is met, in addition to the regional garrison requirements dropping, cities no longer require a 10 CV garrison, but they will still require a security unit garrison. Also, only a security unit garrison is required in a city that is in a region containing an Allied combat unit. This condition is notated in the garrison screen by an (S) next to the city name.

If either the SW or SE France zones contain an Allied controlled hex, then the other zone will be treated as if it contained an Allied occupied hex for garrison requirement purposes, resulting in the (garrison requirement being set to 0.

Any condition that causes the garrison requirement to be set to 0 will set the partisan activity value to 10, but this condition is not necessarily permanent. Garrison requirements can return if there are no longer any Allied controlled hexes in the applicable garrison zone.

The region garrison requirements change over time and are set forth in the following table:

Region	Jun 1943	Sep 43	Mar 44	May 44	After Invasion of Northern Europe	Boundaries of Region
Denmark (1)	15	20	20	20	10	Denmark

Netherlands	25	20	15	15	10	Netherlands
Belgium	35	25	25	25	10	Belgium
NE France (2)	60	60	75	100	40	French and Y<215 and x>85
NW France (2)	100	100	120	130	50	French and Y<215 and X>86
SW France (2)	40	40	40	40	15	French and Y>214 and x<86
SE France (2)	45	45	45	45	30	French and Y>214 and X>85
N Italy (2)	0	40	40	35	25	Italy and Y<244
Total Required	360	385	395	425	190	

Notes

(1) Denmark will not suffer any partisan attacks, but VP will still be lost if garrison requirements are not met.

(2) Regions in France and Italy are delineated by orange lines on the map.

Cities that must be garrisoned are listed below along with the date that the garrison need for the city begins. By May 1944, there are 9 cities that require a 10CV garrison and at least one of the units must be a security unit.

CITY GARRISON REGION	JUNE 1943	SEPTEMBER 1943	MARCH 1944	MAY 1944
Belgium	Brussels	Brussels	Brussels	Brussels
NE France	Amiens	Amiens	Amiens	Amiens, Dreux
NW France	Rennes	Rennes	Rennes	Rennes, Tours
SW France	Bordeaux	Bordeaux	Bordeaux, Toulouse	Bordeaux, Toulouse
SE France	Avignon	Avignon	Avignon	Avignon
N Italy	Bologna	Bologna	Bologna	Bologna

Hotkey Shift-k will display color coded shading on all captured cities or urban hexes requiring a garrison where blue equals 100 percent or more, yellow equals 1 to 99 percent, and red equals no garrison present. With the city or urban hex selected, the name in the General Information and City box (5.1.5) will include the current percentage of any garrison requirement currently being met. This is normally the percentage of the 10 CV that is in the city, although the percentage displayed is multiplied by ½ if no security unit is present in the city (so no more than 50 will be shown if no security unit is present in the city). If all that is needed is a security unit, then it will show either 0 (if no security unit) or 100 percent (if there is a security unit). The Western Allies player will not be able to see the garrison percentage in Axis held cities nor will they be able to access the Garrison screen.

GAMEPLAY NOTE

Note that required Axis garrison levels not only reflect the need to fight Partisans, but also strategic/political instructions from Axis High command (based at least partially on poor information regarding Allied amphibious capabilities). In effect the Axis player is penalized if he ignores these instructions. Axis players are strongly advised to meet all of their garrison requirements as the victory point cost of insufficient garrisons is very high.

18.3. PARTISAN ACTIVITY LEVEL AND ATTACKS

The partisan activity level is determined by whether the Axis player is meeting the German garrison requirements and will impact both the number of victory points earned or lost by the Western Allies player and the number of partisan attacks conducted.

18.3.1. PARTISAN ACTIVITY LEVEL

The Partisan activity level (PAV) in each area is calculated by adding 10 to the following values:

- +30 for failure to meet an area garrison requirement
- +2 for each CV point short of the garrison requirement in an area
- 1 for each 2 CV points over the garrison requirement in an area
- +20 for each garrison city without a security unit

+10 for each CV point short of the 10 required in a garrison city

If the partisan activity level goes below 10, for every point below 10 (down to - 10) there is a 1/20 chance of scoring a negative VP. For example, if the Axis had 12 more CV in the area than required, this would drive partisan activity from 10 to 4 (10-(12/2)). With a partisan activity of 4, there is a 6/20 chance of having a negative VP scored. The most benefit the Axis player can get is having 40 CV extra in an area, which would drive the partisan activity to - 10 which would result in 10 - - 10 or - 20 which would be divided by 20, yielding - 20/20 or - 1. So if there are 40 or more CV extra in an area, the Axis player will score - 1 VP (anything between a PAV of - 9 and +8 and there is a die roll chance of scoring - 1 VP for the area, - 10 or lower and the Axis player automatically scores - 1 VP).

After ending the Axis movement phase, if the Axis player has failed to meet garrison requirements, such that the partisan activity value in a region is over 10 (which means points will be scored in a region due to city or region garrison shortage), a warning pop-up will display that will allow the player to return to the Action phase if desired.

18.3.2. PARTISAN ATTACKS

The higher the partisan activity level, the more partisan attacks will occur in a region or city, but no partisan attacks will occur if the partisan activity level is 0 or below. There are no partisan units, but attacks generated by the partisan activity level will be displayed in the combat resolution report and battle locator (F11). Partisan attacks are directed against rail line hexes and factories in town, city and urban hexes. Partisan attacks against rail line hexes will result in either the addition of 30K tons of rail usage in the hex or causing one percent of damage to the rail line in the hex. In addition if a city hex with one or more factories is attacked, there is a small chance that a factory will be damaged, with one factory in the hex taking 100 percent damage.

18.3.3. FRENCH PARTISAN UPRISING

To represent the historical French partisan uprising, when the Paris hex is captured by the Allies, or there are 10 Allied controlled hexes in each of 2 French garrison regions, hexes in France may change to Allied control or have their rail usage increased at the end of the next logistics phase, after rail usage is reduced. German units can prevent the change. All German units prevent a change in any hex that is within a number of hexes of the unit equal to $1+(\text{unit CV}/2)$. The CV value is not modified by weather. For example, a German unit with a CV of 9 would prevent a change in any hex within 5 hexes of the unit. German Security units will prevent a change out to a range in hexes equal to $1+(\text{CV}*2)$. Hexes with mountain, rough, swamp, heavy woods, urban and heavy urban that are not within range of a German unit have a chance of switching to Allied control, with the probability being doubled in the SE French garrison zone. All other affected hexes will have their rail usage set to 30k tons instead of changing to Allied control. This rule continues to apply each logistics phase as long as the conditions are met. In either case, the hex or hexes in question must be linked to an Allied supply source or they will change back to Axis control, this will leave rail lines damaged in hexes that change back. Note that hexes containing air base units will not change control.

19. REINFORCEMENTS AND WITHDRAWALS

19.1. RECEIVING REINFORCEMENTS AND CREATING NEW UNITS

Both sides receive complete new units as reinforcements during the game. Destroyed German and Western Allies units are returned to play as empty or nearly empty units, requiring replacements and supply before they are usable again. Destroyed Axis Allied units are permanently eliminated and cannot be rebuilt. Both sides can create fortified zone units

19.1.1. REINFORCEMENT PLACEMENT

Reinforcements appear per the unit reinforcement and withdrawal info screen (26.3.9). There are two methods of reinforcement placement for on-map combat, multi-role and HQ units. In the first method, German combat and headquarters units will appear in a controlled city or urban hex of their nationality that does not violate stacking limits in Central Germany or westwards. Western Allies combat and headquarters units will appear in a controlled city or urban hex starting with the western edge of the map and moving eastwards. Different nationality units are limited as to the nationality of the city or urban hexes they can appear in as follows:

For all units: in a location of the unit's nationality.

In addition:

US and Canada - British Locations

Free French - Algerian and French locations

Poland, India and South Africa - Tunisian locations.

Combat and headquarters units reinforcements that do not have an open spot in a valid city or urban hex will appear in a hex adjacent to a valid city or urban hex. If the situation should exist where there are no valid hexes available for the placement of a reinforcement unit, the unit will never appear. Destroyed combat and headquarters units that are reformed as nearly empty units to be rebuilt with replacements follow the same placement rules as above. In both these cases the city or urban hex must be on a rail line that is connected to the supply grid, can't be adjacent to an enemy controlled hex, and must be part of the playable map area.

In the second method, reinforcements will be scheduled to arrive at a designated hex on the map area. In order for the unit to be placed, it must meet three conditions. The designated hex must be friendly controlled, it must be at least three hexes away from an enemy unit, and the reinforcement cannot violate the stacking limit upon entry. If the above conditions cannot be met, the six adjacent hexes to the originally designated hex will be checked and the unit placed in one of those if conditions can be met. If none of the six adjacent hexes meets the conditions, then the unit will be placed in a town, city or urban hex somewhere to the east (Western Allies) or west (Axis) that does meet the conditions. The designated or anticipated alternate arrival hex for the unit will be shown in the reinforcement and withdrawal screen.

Amphibious HQ units that arrive as reinforcements will change their arrival hex to a port hex or a sea or ocean water hex next to a port hex if their arrival hex already has 3 units in it.

Reinforcements and reforming units must follow the stacking limit of three units per hex when being placed. Those units being placed as reinforcements that have manpower of less than 200 men will appear with morale of 40 and experience of near 30.

Some German reinforcements will go directly to the East Front box (23.2) upon arrival. These units will be colored red in the reinforcements and withdrawals screen (26.3.9).

Italy will not receive any reinforcements prior to the Italian surrender. Both sides Italian reinforcements that historically appeared after the surrender will be delayed turn by turn until after the Italian surrender occurs (18.1.3).

Air group units that appear as reinforcements will initially be placed in their National Air Reserve (8.5). Reinforcement air group units do not use pilots already in the pool, but create them when they are placed in the national reserve. The pilots in reinforcement air group units will have experience levels that are an average value equal to the air group unit's experience.

V1.00.00 – 21 November 2014

Added a green border around newly arrived reinforcements on the map when the view unit modes button is toggled on (shift-r).

19.1.2. REBUILDING DESTROYED COMBAT UNITS

German and Western Allies combat units that are destroyed will automatically be rebuilt (Allied support units will not be rebuilt). These units will be brought back on the map as empty or nearly empty units the following turn with placement on the part of the map per section 19.1.1 regarding previously destroyed units. The unit placed back on the map will usually have just one ground element and will rebuild over time by drawing replacements. Reforming units are initially set to refit mode. Reforming German units are frozen for 5 turns. Rebuilding units will have their morale set to 30+ (national morale/4)+ random(national morale/4). This will never be lower than 30 or higher than 70. The initial experience for the ground elements in the unit will be set to 15+ (morale/2). This initial experience will impact the experience of the first batch of replacements that are received by the unit. The Max TOE of rebuilt destroyed units is initially set to 0. These can be changed by the player while the unit is frozen (up to between 50 and 100) if the player wishes to fill out the unit with troops and equipment.

German Infantry Divisions destroyed on or after August 1, 1944, will return to the map as a VolksGrenadier Division.

In non-campaign scenarios, destroyed units will not return to the game to be rebuilt

19.1.3. CREATING FORTIFIED ZONE UNITS

Fortified zones (7.5.1) can be created by either player at a normal cost of four admin points by selecting a hex and then selecting the "Create fortified unit" button in the map info tab toolbar (5.1.2.1). Note that fortified zones built in Italy that are not on the coast only cost one admin point. Fortified zones can be placed in any friendly controlled hex, with the exception that Players may not build Fortified Zone units in hexes next to an enemy combat unit unless that hex is also occupied by a friendly combat unit. Fortified Zone units initially appear with no ground elements or supplies and will have to receive replacements and supplies to become active. Axis and Western Allies fortified zone units will be German and US nationality respectively.

19.2. UNIT WITHDRAWAL

Certain units will be withdrawn from the game as specified in the Reinforcements and Withdrawals screen (26.3.9). A unit will shift into Withdrawing Mode between 4-6 turns prior to the date listed on the Reinforcements and Withdrawals screen. The unit will be withdrawn from the map during the logistics phase of the turn listed. When an on-map unit is withdrawn from the map, any support units attached to the unit will remain in the game by automatically transferring to the withdrawing units' higher headquarters unit.

19.2.1. WITHDRAWING UNITS REQUIREMENTS AND RESTRICTIONS

Units scheduled to be withdrawn cannot be disbanded or merged. Units in static mode scheduled to withdraw will automatically reactivate in the same logistics phase as they are withdrawn, expending admin points as for a normal reactivation. This reactivation may cause the number of available admin points to go to zero, though they will never fall below zero. When an on-map unit is withdrawn, if it does not have at least 75 percent of its TOE, it is placed as if it was a reinforcement (19.1.1) with a maximum TOE setting of 100 percent, and then set to frozen status for 250 turns. Once the unit reaches 75 percent of its TOE, it will be removed from the map. When a unit is in Withdrawal mode in the turns just before it withdraws, it is treated as if it is in

refit mode. Support units scheduled to withdraw are removed immediately on their withdrawal date, regardless of their current TOE. If an on-map unit slated for withdrawal is completely destroyed before its withdrawal date it will be returned to the map as a nearly empty unit and sit at frozen 250 until it rebuilds to at least 75 percent TOE.

As an exception to the above, in small scenarios that only include a portion of the total map area, units will be withdrawn off the map even if their TOE is less than 75 percent.

20. LOGISTICS (SUPPLY AND REPLACEMENTS)

“Amateurs study tactics; professionals study logistics.” All units must have access to an adequate amount of supply and replacements to continue to function effectively. There are three types of supply in Gary Grigsby’s War in the West; general supplies, ammunition and fuel. Fuel and general supplies, which include ammunition (ammo), are generated by each side’s production system. Replacements provide the manpower and equipment, including ground elements for ground units and aircraft, pilots and aircrew for air group units, to replenish losses from combat and attrition. In order for units to receive supplies and replacements during the supply/replacement segment of the logistics phase, they must be within range of the supply grid, the main part which consists of permanent national supply sources connected by a rail network of undamaged rail line hexes to a depot in town, city and urban hexes. Ports can also be connected to the supply grid, allowing tracing of supply lines over water. The generic vehicles of the motor pool are used to bridge the gap between the depots and the ground unit requiring supply and replacements. Freight is the common measure of all material transported by rail or over water hexes from port to port. Limited mainly by rail and cargo ship capacity, freight tonnage is sent via ships and rail for storage at depots where it can be converted to provide supplies, fuel, ammo, and replacements drawn from available pools. Supply priority can be set for each headquarters as well as each depot and air base unit. The amount of supply and replacements delivered is dependent on many factors, to include the distance from the depot to the unit, whether the unit moved during the last turn, and vehicle shortages in both the motor pool and the unit. Units can be in one of two supply states; in supply and isolated. Isolation is caused by an inability to trace to a supply source. Isolated units can still draw supplies from a nearby depot, and can be supplied by air. Town, city and urban hexes that are isolated or lack a nearby supply source will suffer starvation damage to their manpower. There are numerous sources of information regarding logistics in Gary Grigsby’s War in the West, to include the logistics phase event log screen (hotkey shift-e), the view logistics information button (hotkey n) and hex pop-up, the show freight shipments (hotkey 8), the metrics screen (hotkey shift-m), the Commander’s Report (26.2), and the individual unit supply detail window (26.3.27).

20.1. THE SUPPLY GRID

The supply grid consists of five parts; national supply sources, the rail network, to include town, city and urban hexes on the network, ports, depots in town, city, urban, and airfield hexes, the motor pool, and the shipping pool. The supply grid serves multiple functions in addition to storing and delivering supplies and fuel. Supplies and fuel generated by the production system are stored in town, city and urban hexes on the rail network to be drawn upon by factories. Factories don’t necessarily need to be on a rail line, and can function if they are within 5 MPs from a rail head. Much of City to city or city to port deliveries of oil and fuel are conducted by pipelines independent of the rail network. Half of all oil and fuel delivered in these cases do not use any rail capacity. Supplies stored in a city cannot be used by units, which need to be supplied by a depot. Supplies stored in a city can be used by construction projects and fuel can be used for vehicles in a depot at the city. Port cities will try to keep a stockpile of supply in the city with the amount desired being higher for larger ports and ports with larger fortification levels. Freight flows from national supply sources through the rail network and/or port to port to depots for conversion to supply and replacements when drawn upon by nearby units. The ability of a unit to receive replacements and repair damaged aircraft and ground elements is dependent on its location in relation to the supply grid, specifically the distance from the depot or depots from which they are drawing supply and replacements. All these functions are conducted automatically during the logistics phase. At the end of the air execution phase, the supply grid is recalculated to account for changes in control of ocean and sea water hexes due to naval interdiction (17.3.5).

20.1.1. THE RAIL NETWORK AND RAILHEADS

A rail network consists of a contiguous path of friendly controlled undamaged rail line hexes connected to a national supply source (20.1.2), or to a port that is considered connected to a national supply source. The last friendly controlled undamaged rail line hexes at the end of these paths is designated a rail head. Ports are considered to be on the rail network even if there is no undamaged rail in their hex as long as they are connected via non-enemy controlled sea hexes to another port that is connected to a national supply source. As an example, a series of undamaged Allied rail hexes in France can lead to a port that is connected by sea hexes to a port in England that is itself connected by rail to a national supply source, and all of these rail hexes would be considered on the rail network. Depots can draw freight from other depots as long as they are connected to the rail network. Units can draw supply from depots that contain freight, although there are some limitations if the depot is isolated from the rail

network. Note that rail hexes that are adjacent to enemy units are considered not to be functioning for the purposes of determining the rail network. These hexes may not be used for strategic rail movement and are not considered railheads for supply tracing purposes.

Game play tip: If you are the Axis player, watch out for partisan attacks on your rail line hexes. Unchecked, partisans can damage enough rail line hexes to cut off some of your forces from the rail network and the supply grid.

In some limited map scenarios, rail hexes outside of the limited area can provide supply trace. This may prevent some units along the map edge from being isolated, and will also allow OKW and other HQ units positioned outside the play area to be considered in supply.

20.1.2. NATIONAL SUPPLY SOURCES

The establishment of a rail network and connection to the supply grid requires the tracing of a contiguous path of rail line hexes (and/or port to port connections over water) to a national supply source. A hex will cease to be a national supply source if enemy controlled or if enemy units are adjacent, even if the hex is occupied by a friendly unit.

Axis national supply sources:

Berlin
Essen
Frankfurt
Vienna
Prague
Milan

Western Allies national supply sources:

Oran
Glasgow
Belfast
Sheffield
Birmingham
Liverpool
American Ports #1 and #2 (off map)

Non-campaign scenarios that do not use the entire map area may have an additional national supply source for each side.

All national supply source hexes will be marked with a white star when the view logistics information button (hotkey n) is toggled on (5.1.2.1).

Railyards located in the same hex as a national supply source will produce twice the tonnage capacity as regular railyards. For example, an undamaged level 2 railyard will produce 10k capacity (5k x 2) but, the same railyard in Berlin, a national supply source, would produce 20k capacity (10k x 2).

National supply sources are permanent physical locations that represent the insertion point of production and logistics material from the virtual production pools, as well as freight tonnage. Each national supply source is set to generate 2.5 million tons of freight in each supply phase, with both players national supply sources receiving that amount in both logistics phases. The only time this does not happen is if the hex is adjacent to an enemy unit. Supplies, fuel, oil and resources stored in cities are located at specific locations are not part of those virtual pools.

V1.00.07 – 19 December 2014

Rule Change - Whenever the Allied player controls a German Nationality National Supply source, the following rules are in effect:

- a. German units that are destroyed will not return to the game.
- b. Units withdrawing are no longer required to be at 75% TOE strength before they are withdrawn.
- c. All frozen German units will unfreeze in the next German logistics phase.

V1.00.13 – 26 January 2015

Previously Undocumented Rule – Temporary ports are considered to be national supply sources for the purposes of determining isolation.

v1.01.20 – 1 February 2016

Added freight level for national supply source depot type. This is the amount of freight that the national supply depot will begin with at the start of each logistics phase. If left as 0 in the editor, then it will start with 1 million freight each turn. This will appear as Depot Freight Level in the rollover text for the depot hex.

20.1.3. FREIGHT

Freight represents the generic capability to transport material through the supply grid. Units receive supply and replacements directly from depots via the automatic use of vehicles by expending freight tonnage and turning it into

needed available items from the production pools. Freight is not converted to the actual material, whether it is fuel, supplies, ammunition, vehicles or ground elements, until it is drawn upon by the end user. This is usually a ground unit, though depots require fuel and vehicles. In addition, freight cannot be converted into a specific material unless that material is available in the applicable virtual production pool. For example, when one ton of freight is moved to a unit that is getting supplies, it is converted into one ton of supplies and at the same time one ton of supplies is consumed from the general supply pool (26.3.3). A shortage of needed material in a pool or a shortage of freight in a player's depots will have the same result of not being able to meet a unit's supply and replacement needs.

Support units may only be reassigned to a unit separated by a sea zone if there is freight to be expended at a depot in the receiving area. Support units that automatically go out to fix rail lines must pay their freight cost from a depot if they have to move from their attached HQ unit over a sea zone to reach the rail line to be repaired.

Freight can be damaged by air attacks and interdiction against railyard hexes with depots and when freight is being transported, resulting in the damage or destruction of ground elements and the removal of supply from applicable pools (17.3.1.2).

20.1.4. PORTS AND THE SUPPLY GRID

Ports are described in section 16.2. A port will be considered connected to the supply grid if it can trace a path of ocean or sea water hexes that does not enter enemy controlled water hexes (16.5.2) to at least one other friendly port connected to the supply grid via rail lines. . Inland ports require a player to own all of the land hexes along the river (and ferry hexes) between the sea and the port for both unit and freight naval transport movement to and from the port (16.2.1). Freight is transported between ports connected to the supply grid during the logistics phase by cargo ships from the shipping pool (16.1, 20.1.8). Tracing from this port hex for supply purposes to a hex or unit can be done along friendly controlled, undamaged rail hexes, if not leaving an enemy ZOC. Ports may be blocked by naval interdiction (17.3.5) and/or amphibious HQ units, which can result in preventing the reception of freight shipments, to include supplies and replacements, and the isolation of any units in the port. Ports with depots will be able to resupply units with supplies, fuel, and ammo as long as they have freight remaining.

20.1.5. RAIL TRANSPORT AND FREIGHT

Though there are differences between the rail transport of units and freight, the information regarding railyard capacity and rail line usage are the same (14.2). Freight is transported by rail during the logistics phase. Unlike ground units utilizing rail transport, freight has unlimited SMP's, but the amount of railyard tonnage capacity required to move the freight is variable and increases with distance from the railyard(s) and increased rail usage in the hex(es).

To recap Railyard load/unload tonnage capacity is created in Railyards, which represent rolling stock available for moving units and freight. Each undamaged railyard factory point, or level, produces 5k tons of rail capacity per turn with the exception that railyards located in the same hex as a national supply source (20.1.2) will produce 10k tons (double) of capacity per level per turn. Remaining railyard capacity will be displayed for each railyard when in rail move mode with the number in the rail circles on the map equal to 1000 tons of remaining load/unload capacity. For example, an undamaged level 2 railyard with 10k capacity (5 x 2) will show a value of 10 in the rail circle when in F2 mode. However, the same railyard in Berlin, a national supply source, would produce 20k capacity (10 x 2) and display a value of 20 in the rail circle. The consumption of Railyard capacity is based upon the size of the Unit or amount of Freight being moved, the distance of the moving freight (if not a unit) from available Railyard capacity, which cannot exceed 50 hexes and congestion on the Rails, which is measured by tons of Rail Usage. In addition, in most cases railyard capacity will not be able to be taken if separated from a unit by major waterways.

In terms of rail line usage, freight can be transported as long as there is railyard capacity available because there is no limit on the number of SMPs that can be expended for freight. The system simply uses more railyard capacity, and at some point, the system runs out of available railyard tonnage if too much is being moved over rails that are maxed out (14.2.24). Rail capacity is reset at the end of the logistics phase, so units always get the first opportunity to use available railyard tonnage. What's unused is then available in the next logistics phase for the transportation of freight for production and to depots.

To reiterate the difference between unit and freight rail movement, for units, railyard tonnage capacity stays constant for transport costs, but units have limited SMP's; the farther the railyard(s) from the units and the more rail usage in the hex(es), the more SMP used for rail transport and the less the unit can travel. Freight has unlimited SMP's, but the amount of railyard tonnage capacity required to move the freight is variable and increases with distance from the railyard(s) (to a maximum of 50 hexes) and increased rail usage in the hex(es). Movement through undamaged rail hexes is possible even if rail usage is maxed out, but at a greatly increased cost in either SMP's (units) or railyard capacity (freight). Movement continues until railyard capacity is exhausted. Since units conduct strategic rail transport movement first, this will usually result in only freight movement being affected. Thus congestion results in less freight being moved by rail in the logistics phase to the extent that rail usage causes the railyard capacity to run out so that freight deliveries drop. Note that as long as sufficient railyard capacity is available, congestion due to increased rail usage will have no impact. With the 50 hex limit and major waterway restrictions, there may be areas that have railyard capacity that cannot be accessed due to the location of the freight the system is attempting to move.

GAMEPLAY NOTE

Player's should be wary of using up all the rail capacity on key single rail lines going to depots near the front to move units as this will likely reduce the

amount of freight that can be moved up that rail line in the next logistics phase.

V1.01.12 – 6 November 2015

Adjusted off rail value calculation.

20.1.6. DEPOTS

It is through depots that all supply and replacements are distributed to units. During the logistics phase, freight tonnage automatically flows through the supply grid via naval transport and rail lines to be received and stored at depots. In the supply and replacement segment, freight is then drawn upon by units and converted to provide supplies, fuel, ammo, and replacements taken from available pools.

Depots can be created and disbanded by the players, with the exception of type 4 depots, which are permanent national supply sources (20.1.2), and temporary depots created by airdrops (17.3.7). Temporary depots cannot be manually disbanded by the player, but will be removed from play when the depot is no longer isolated.

Depots may normally only be created in hexes that are not in an EZOC and are connected to the supply grid via a port in the hex or an undamaged linked rail line in the hex. Depots may always be built in a non-isolated port, even if there is no rail line link to the port. In addition, temporary depots can be created in a hex without a depot by the air drop of freight through air transport (17.3.7), although the temporary depot will only remain as long as the hex is isolated. Once created, a normal depot will remain even if it is cut off in subsequent turns (but since freight is only received via naval or rail movement, it would receive no additional freight once it is cut off). If a depot is disbanded (or a temporary depot is removed), vehicles will be removed from the depot in the next friendly logistics phase. The freight will remain in the location (it will not show in the hex pop-up text), and it may be sent to units, but this will require vehicles to return to the depot. Players can create a depot in a town, city, urban or airfield hex at the cost of one AP point, and can disband eligible depots at any time. Depots are more effective in hexes with railyards. Whenever a depot is created in a rail line or port hex without a railyard, a level 1 railyard will be created with 100 percent damage at that location.

When the toggle logistics info is on (n key), depot hexes are displayed with an inverted triangle. Depot priority (0-4) will be displayed inside the depot symbol, with 0 in red, 1 in orange, 2 in yellow, 3 in dark green, 4 in light green. A white symbol for each type of depot will also be displayed (see below).

There is a hierarchy of depots as follows:

Depot 4 (Star symbol) – National supply source (20.1.2) – this is a permanent depot that cannot be disbanded and is the source of freight tonnage to be distributed to other depots.

Depot 3 (Ships Wheel symbol) – Port supply source – this is a port that can be used as a source of freight to be shipped via naval transport over sea and ocean water hexes to another port.

Depot 2 (Anchor symbol) – Port Depot – this is a port that can receive freight over water.

Depot 1 (Rail Line symbol) – Railyard Depot – This is a depot that receives freight via rail.

Player created depots will either be type 2 if in a hex with a port or type 1 for all other hexes.

The maximum amount of tons of freight that a depot can receive via the port in a turn is equal to 15,000 * the damaged adjusted port level (as of the prior turn). The maximum amount of tons of freight that a depot can receive via rail is equal to 5,000 * the damage adjusted rail yard level (as of the prior turn). The maximum storage capacity of tons of freight for Western Allies depots is equal to ((60k*port level)+(20k*rail level)), and the maximum storage capacity of tons of freight for Axis depots is equal to ((15k*port level)+(20k*rail level). For example, an Axis level 2 port with a level 1 railyard 1 would have a capacity of $2 \times 15 + 1 \times 20 = 50$ k tons, but if it was an Allied controlled port, it would be $2 \times 60 + 1 \times 20 = 140$ k tons. The depot will only try to receive goods up to its maximum storage capacity. The depot will attempt to receive its per turn maximum up to its storage maximum.

Depots can deliver fuel through hexes with a non-damaged rail line from one depot to a lower type depot, with port (type 2 or 3) to railyard (type 1) being most common. The depot will convert up to 2500 tons of freight to fuel and send it via the pipeline assumed to be next to the rail line. This fuel will go into the town, city or urban hex location, and this fuel can be used by vehicles that are operating from the depot at the location, which is important as vehicles can consume a lot of fuel.

Units in isolated areas can also use freight in a depot. Depots in isolated hexes will lose 5 percent of their freight each turn in the logistics phase to reflect that some of the freight is not the material that is needed by the units that are drawing from it.

When a depot is captured, most of the freight is destroyed (causing the destruction of some fuel and supplies from the player's pool), but some small amount of freight is captured resulting in the placing of fuel and supplies in that location for the capturing player's use. In addition, a small number of vehicles are destroyed and the rest are returned to the pool. With the exception of depots in port hexes, captured depots are destroyed (15.1.4).

V1.00.00 – 21 November 2014

Disbanded depots will try to ship some of their freight by rail to other type 1 depots. Also, a small amount of the freight will be removed, a small amount will be destroyed (with destruction of fuel and supplies from the pool), and some will convert to fuel and supplies and be placed in the location.

V1.00.21 – 18 February 2015

Improved the shipment of supplies by sea to Allied depots that are also connected by rail.

V1.00.44 – 9 June 2015

Clarification – All level 3 depots should be set up in scenarios with rail access to a national supply source (level 4 depot). Only naval shipments to level 2 ports will show a blue line on the map when using the 8 key as it is assumed that all level 3 depots are receiving their freight via land.

20.1.6.1. FREIGHT SHIPMENTS TO DEPOTS IN THE LOGISTICS PHASE

Freight movement to depots is conducted in two shipment phases. In the first phase, type 1 (rail) depots will only attempt to receive freight up to 1/4 of the depot's capacity, while other types of depots will try to receive up to their full capacity. In the second phase, all depots will try to receive up to their full capacity. Ports are still restricted to receiving by sea only what they can unload with their available port unloading capacity (16.2). There is no unloading limit to what can be unloaded by rail in a depot, other than the maximum storage capacity of the depot (20.1.6). There are still limits on what can get shipped in by rail based on railyard capacity that is available to ship the freight (20.1.5). Note that depots in German ports will not receive supply by water hexes if they are linked via rail to a national supply source, but will try to get them via the rail network.

Selecting the 8 key displays blue, red and white lines on the map to show the flow of freight from depots to units and depots to depots. Each unit keeps track of the best depot that it received freight from during the last logistics phase. The red lines are drawn from the best depot to send freight to a unit to that unit. Blue colored lines display freight moved from ports to port while white lines display non-port depot to depot.

PLAY TIP

Careless placement of combat units in relation to depots will cause your motorized units to lose lots of MPs in those turns when you are burning tons of fuel and running far from your supply grid. Don't forget you can conduct air transport missions to drop supply to combat units, although it is much more efficient to send to air transport to an airfield than to drop directly on a unit not on an airfield.

20.1.7. MOTOR POOL

The motor pool represents the generic vehicles not yet in use by units or depots. All vehicles are "2.5 ton equivalents." Vehicles are used by depots to truck freight to units. Vehicles move from the pool to depots as needed by the depots to deliver freight, and some portion of unused vehicles go back to the pool. Vehicles can also go from units to depots and the pool as the system tries to balance all needs. When a vehicle is returned to the pool, one ton of freight is placed in a nearby depot.

There is a process to redistribute vehicles as needed back and forth between depots, units and the pool. This process does not happen immediately; however, as too much freight would be used up in maximizing efficient vehicle distribution. Suffice it to say there will be some friction in the movement of vehicles. In the real world vehicles are not always where they are needed, and aren't always returned immediately when they aren't getting used. The player can alter depot priorities and/or disband depots if they see something that is continually inefficient. The production pool will generally try to keep a reserve of 10k-20k vehicles that are used by the production system and provide some flexibility to move vehicles around as needed. The production screen shows the number of vehicles in units with the number in parentheses next to it being the total number of vehicles the units require. The number of vehicles in depots is also shown with the number in parentheses next to it being the number of vehicles that were used by the depots during the current player-turn. To motorize a non-motorized unit or mobilize a STATIC unit, vehicles are taken from the motor pool if there is sufficient freight in nearby depots to convert to vehicles but, there also has to be enough available vehicles in the motor pool or the action will not be allowed.

20.1.7.1. EMERGENCY USE OF VEHICLES

Units with more than 33 percent of their needed vehicles will use up to half of their vehicles to resupply themselves if there are no vehicles available in the motor pool. When this happens, the vehicles are sent back to the depot (although some may ultimately return to the unit in the same turn as part of vehicle relocation of vehicles carrying freight to units). Whenever this happens in the logistics phase (and it can theoretically happen as many as 5 times per unit in a turn), the unit will be charged 5 MPs in a way similar to units being charged for MPs when attacked during the enemy turn (1 4.1.2.1). A motorized unit will be charged 5 MPs, a non-motorized unit will be charged 1 MP, each time this is done.

20.1.7.2. GENERIC VEHICLE ATTRITION

Vehicles in depots suffer attrition based on their activity during the supply and replacement segment moving freight from depots. Vehicles in units on the map suffer attrition during the logistics phase based on the amount of MPs expended by the unit during the previous movement phase. The above is specific to generic vehicles; AFV and combat vehicle

breakdowns are calculated using reliability ratings (9.6).

V1.00.44 – 9 June 2015

Formula Adjustments - Significantly increased the attrition to vehicles from resupply operations. Increased both the amount of vehicles damaged and destroyed.

20.1.8. SHIPPING POOL

Each side has a shipping pool consisting of a number of troop and cargo transport ships (16.1). The Western Allies player has access to the entire shipping pool for the whole map area. For the Axis player, transport ships are permanently divided between the Atlantic Ocean and the Mediterranean Sea parts of the map area. Four troop ships and thirty cargo ships are added to the Western Allies shipping pool per turn. Starting in January 1944, cargo ships increase to fifty per turn. However, when the AI plays the Western Allies, it will receive six troop ships per turn instead of four. The Axis player does not receive any additional transport ships during the game. In addition, one half to three quarters of all Axis transport ships are removed from the Mediterranean part of the shipping pool when Italy surrenders (18.1.2).

The number of transport ships in the pool are displayed in several places, to include the production screen (26.3.3) and in the general information and city/airfield box (5.1.5) when Naval Transport (F3) or Amphibious Transport (F4) mode is selected in the action (move) phase (T = Troop ships and C = Cargo ships). Note that Axis numbers will be split between Atlantic and Mediterranean totals.

20.2. SUPPLY STATES

During the supply portion of the logistics phase, units of the phasing player are determined to be in one of two possible supply states; In Supply, or Isolated. A unit is in supply if it can trace a path of any length to a railhead. If the unit does not qualify as in supply then it is isolated (15.13). During the action phase, units of the phasing player (not non-phasing player units) may have their supply state altered based upon the existing situation. Whenever a unit moves, or a battle is resolved, phasing player units recheck their supply state. If some action during the turn has reconnected the unit with a path of any length to a railhead, then the unit will no longer be isolated. The current supply state of each unit is displayed in its detail window as either 'In Supply' or 'Isolated'.

The toggle unit modes/isolated button in the map information tab (5.1.2.1) will highlight map counters so that isolated units will be highlighted in red.

The counter in the unit bar will always be bordered in the appropriate color if the unit is not in supply. These border colors will change if units change their supply state during the Action (move) Phase. Supply states are also displayed in the commander's report (26.2)

20.2.1. ISOLATED STATE

Isolated units can only receive supplies, fuel and ammo through air transport drops to temporary depots or freight from isolated depots also in the pocket. Isolated units can draw replenishment using non-vehicle methods (20.4.1.1) or by using vehicles already in depots and units inside the pocket (15.13). Isolated units cannot receive replacements and will not return damaged ground elements to the production pool. Depots in isolated hexes will lose 5 percent of their freight each turn in the logistics phase to reflect that some of the freight is not the material that is needed by the units that are drawing from that depot. Also note that supplies in cities cannot be used by isolated units, but depot freight can be used by isolated units.

See section 15.13 for combat related effects on isolated units.

PLAYERS NOTE

You will need to stockpile freight in a depot in a port you expect will become isolated, as the depot will be able to distribute its freight to units in the hex or in a small pocket. You should also place depots in fortifications, ports or otherwise that you wish to hold. Just remember that when the depot is captured, some freight and vehicles are captured and a number of supplies, fuel and armaments points are destroyed from the player's pools to account for the remaining freight destroyed at the depot.

20.3. TYPES AND USAGE OF SUPPLY

As mentioned above, supply is composed of three types; General Supplies (supplies), Ammo, and Fuel. Each type of supply is used for different purposes. In general, supplies are more important to non-motorized units and fuel is more important to motorized units, but all units require ammo, which is generated from supplies.

20.3.1. GENERAL SUPPLIES

All units require supplies for food and general maintenance. Ammo is used in combat, and is created from supplies in the pool (20.3.2). Supplies also represent fodder for horses and thus are required by non-motorized units for movement (14.1.2). Note that the consumption of supplies for food and general maintenance occurs during the logistics phase prior to the turn. Since motorized units don't need supplies for horses, they require much less supplies. Many non-motorized units require more supplies for fodder that is expended during movement.

Supplies are also used as a part of the process to reduce fatigue in ground elements during the logistics phase.

20.3.2. AMMUNITION

All units require ammunition for combat. Combat units with a low ammunition percentage will suffer a significant decline in combat effectiveness, especially when attacking. In addition, units that are adjacent to enemy units during the logistics phase will use up approximately one percent of their ammo to reflect scouting, patrols and low level combat. Ammunition is not produced separately, but is initially considered integral to general supplies. General supplies are converted to ammunition when freight is delivered to units from depots. For example, 10 tons of freight delivered to a combat unit would be converted to 10 tons of ammunition while 10 tons of supplies would be removed from the general supply pool. Units have a chance of receiving additional ammunition shipments during any combat they are involved in.

20.3.3. FUEL

Motorized units require fuel for movement during the movement phase (14.1.2). Vehicles that move freight from depots will also consume fuel during the logistics phase. This fuel can be drawn from fuel stored in cities in the same hex as the depot.

20.4. TRACING AND RECEIVING SUPPLY

A unit must be able to trace a path to a national supply source in order to be considered 'In Supply' (20.2). If a valid path cannot be traced then the unit is considered Isolated. Supply can be traced through sea and ocean water hexes from port to port. Supply can be traced through enemy Zones of Control (EZOC), but may not be traced through enemy controlled hexes.

In order to actually receive supply, fuel, ammo, and/or replacements, a combat unit attempts to trace a path to nearby depots with available freight, usually starting with the depot that is closest to the unit. This path can be of any length, but while there is no limit on the distance vehicles can try to transport freight to a unit from a depot, the further the distance, the less freight actually reaches the unit while the number of vehicles and fuel used will go up and the number of vehicles damaged will also increase. Note that it will be very painful to be far from a depot. A unit can receive shipments from up to five different depots in a logistics phase, although it will usually receive from only one or two in a turn.

20.4.1. TRACING SUPPLY

Supply can be traced over land or water. There is a MP cost for tracing over land that is usually based on motorized MP using generic vehicles, but also takes into account animal drawn transport and the special situation of isolated units.

20.4.1.1. SUPPLY PATH TRACE OVERLAND AND MP COST

The movement point cost for all supply path traces are calculated as if the path was being travelled by a motorized unit with a morale of 99 (14.1.2). All motorized movement point costs are taken into account, to include EZOC, weather, terrain, and river hexsides. Supply can be traced through an enemy ZOC as long as the hex is friendly controlled or pending friendly, though tracing supply this way will result in increased MP costs. Supply paths cannot be traced through enemy controlled hexes or across unfrozen impassable lake or river hexsides.

Normally vehicles are used for the delivery of supply and replacement to units from depots. For non-isolated units, German and type (0) non-motorized Allied units can receive supply and replacements from a depot without having to use vehicles up to 3 hexes from the depot through the use of animal drawn transport. However, this will cost double the freight being delivered as the animal drawn transport is assumed to be consuming fodder (if the unit is isolated, it receives the delivery but does not pay double freight). As an exception to the above, Western Allies units within one hex of a depot get deliveries from that depot without having to use vehicles from the depot or paying the double freight cost. In this case it is assumed that organic vehicles from the unit are going and getting the freight themselves.

When a vehicle is taking freight from a depot to a unit, it traces the range in hexes and the MP cost to the unit. For purposes of tracing the MPs from a depot to a unit when vehicles are moving freight to the unit, the MP cost is limited to no more than 4 times the range in hexes to the unit. Also, the MPs to enter the hex the unit is in are not counted in this path length. This is important as the further the path in MPs, the less can be carried by each vehicle and the greater chance of loss enroute. For example if a unit is 35 MPs and 5 hexes, with the hex the unit is in counting for hexes but not MPs, the actual MPs counted for supply delivery purposes would be 20 (5x4). It is the MPs from the depot to the unit that determines how much fuel is used by the vehicles, how much the vehicle can carry, and the chance of the vehicle being damaged or lost enroute. When the range is close enough to deliver goods with animal drawn transport the MP cost will always be one.

V1.00.48 – 12 July 2015

New Supply Path Rule (section 20.4.1) – During the logistics phase, a supply path cannot be traced out of a sand hex, but it can be traced into a sand hex. Note that supply paths are traced from a supply source to a unit. So if there is a sand hex between a unit and its supply source, the unit will not be getting supplies.

20.4.1.2. SUPPLY TRACE OVER WATER HEXES

Supply trace over all water hexes requires a port to port connection, with at least one of the ports being on the supply grid and possessing a type 3 depot (port supply source). The supply trace may not go through enemy controlled water hexes, nor may the path go through or adjacent to a hex containing an enemy Amphibious HQ, but is not blocked by enemy units utilizing naval transport that remained in a water hex 'on ships'. Units can trace a supply path over friendly controlled ferry hexes (6.3.6).

20.4.1.3. SUPPLY TRACE VISUALIZATION

There are several map area aids to help in the visualization of supply traces. The toggle rail damage info button in the top panel map info tab (5.1.2.1) displays info about ranges to a railhead. If a hex is greater than 10 hexes or 25 MPs from a railhead, it is shaded light grey. If it is greater than 25 hexes or 100 MPs from a depot it is shaded dark grey. Enemy hexes will be shaded rose. The 8 hotkey can be used to view the movement of freight to units and between depots (20.1.3).

20.4.2. DEPOT AND UNIT SUPPLY PRIORITIES

Depot Supply Priority: Each depot has a priority from 0-4, which can be set in the city detail window (26.3.28) through the general information and city/airfield box (5.1.5) or in the Depot section of the Locations tab of the Commander's Report (26.2.7). In addition, When the logistics information button (n key) is toggled on, the supply priority of a depot can be changed by hovering over the hex and pressing "." and "," keys to increase or decrease the depot priority. This is not possible when in F11 mode.

With the exception of depots set to supply priority 0, the higher the number the higher the priority for the depot to receive freight. Depots with higher priorities will be given the first chance to receive freight before railyard and/or port capacity is used up. Depots with priority 0 will not receive any freight from other depots in the logistics phase, so this setting should be used only when the player wants to drain a depot.

When a depot is created by a player, its priority is set to 3 by default. When a depot is created automatically in a port that is captured, its priority is set to 3 by default. When a temp port depot is created, it is set to priority 4 by default.

Unit (HQ) Supply Priority: Each ground unit has a supply priority from 0-4 that is set at the HQ unit level. Units with the highest priority will have the first chance to receive supply and replacements. Units with lower priorities may be forced to try to get their supplies from more distant depots as depots run out of freight, and in most cases will not attempt to receive all of their requirements. Priorities are shown and set in the HQ Unit Detail Window (26.3.17) or through the supply priority function in the HQs tab of the Commander's Report (26.2.3). When an HQ unit changes its priority from the unit detail screen, all units attached to that HQ unit (as well as all units down the chain of command under this HQ) will change to the same priority. In addition air base unit supply priorities can be set individually through the air base unit detail window (26.3.18) or through the supply priority function of the Unit tab of the Commander's Report (26.2.2). Note that air base units with supply priority set to zero will not be resupplied. Air base units with higher supply priority will be resupplied first during the air execution phase resupply segment. It is recommended that players start at the higher level HQ units and work their way down the chain when changing unit supply priorities. For example, if the 1st Army HQ unit is changed to supply priority 4 from its unit detail screen, all units in the 1st Army will now have a supply priority of 4. If the V Corps HQ unit, which is attached to the 1st Army has its supply priority changed to 3, all units in the V Corps will change to 3.

East Front Box Supply Priority: Units in the East Front box have their supply priority determined based on the situation in the EF box (23.1.3).

V1.01.31 – 9 April 2016

Rule Change - Withdrawing units are now set to supply priority 4 and this is not adjustable by the player. This is the one case where a combat unit can have a supply priority different from its HQ. This is necessary to allow the unit to build up to the 75% strength required for withdrawal.

20.5. THE SUPPLY/REPLACEMENT SEGMENT

During the supply/replacement segment of the general logistics phase units may have multiple chances to be resupplied and/or receive replacements. Units attempt to draw freight to be converted into supply and replacements from the nearest depot, which can be up to 50 hexes from the unit. The further from the depot, the greater the use of vehicles (trucks) and fuel to move the supplies to the unit (more vehicles will be used, and more damage will be taken by the vehicles). In some cases, vehicles are not required to deliver (20.4.1.1) supply. Once the closest depot is depleted of freight, a unit will try to get its remaining needs from the next closest depot. Depots in ports are an exception as air base units will tend to be more willing to go to ports in the rear for resupply, while ground units will first try nearby depots and only later during the supply phase attempt to get freight from rear area ports. A unit is limited to receiving freight from no more than five different depots in a logistics phase, although it will usually receive from only one or two in a turn. Units that do not have the required support (7.2.2) may receive less supply and replacements, with the greater the shortage the greater the impact on deliveries. Vehicles are also drawn from depots by units that have a need. If there are not enough vehicles in units, depots, and the production pool to meet all of the needs, then the system will try to balance the

different needs as best it can (20.1.7).

Strategic bombing, ground attack and interdiction of hexes with depots can result in damaged and destroyed ground element equipment when freight from a depot is shipped to a unit as replacements, especially when the railyard or port in the depot hex has been heavily bombed. Note that unlike Gary Grigsby's War in the East, consumption of supplies comes before replenishment. It used to be that the need was reduced in the display by the amount consumed, which made it appear the unit wasn't so short of supplies. This has been changed, so the need shown is the true need.

20.5.1. THE SUPPLY/REPLACEMENT SEGMENT SEQUENCE

The segment consists of an East Front Air resupply/replacement followed by a Standard Resupply/Replacement phase for all other units except for East Front air units.

The standard Resupply/Replacement segment is broken into many smaller segments in which units, depending on their supply priority and how much they have of an item relative to their need, may attempt to draw supplies, fuel, ammo, vehicles, and replacements from freight at nearby depots. There are 5 main phases, starting with Priority 4, then 3, 2, 1 and 0. Within each main phase, there are several sub phases where, based on the unit supply priority, units may attempt to get a 20 percent delivery of the needed item. An item must be below a certain percentage of need as per the chart in section 20.5.1.1 in order to attempt replenishment. The logic is that higher priority units always get to try first, but lower priority units will get to try to get some freight before the higher priority units can get large amounts (including overstocking). Whenever a unit qualifies to try to get resupplied, it must pass admin and support checks to get the item. When successful, it will get 20 percent of the need of the item, which is subject to availability in the applicable pool and also subject to loss of freight during the delivery from the depot to the unit. If the unit is a motorized unit successfully attempting to get fuel, it will get 40 percent rather than 20 percent. If the unit is an artillery unit successfully attempting to draw ammunition, it will get 40 percent. For the unit to draw replacements, it must either be in refit mode (20.6.7) or pass both admin and support checks. Also, if the ground element has less than 81 percent of need, and the unit is in refit mode, if it passes both admin and support checks, it will get 40 percent of the need instead of the normal 20%. Note that the supply need of units will change as replacements flow into/out of units in replacement phases to allow the unit to get additional required supplies after replacements arrive but during the same logistics phase. A supply priority 4 unit that did not move on the prior turn and is not adjacent to an enemy controlled hex will have an extra opportunity to replenish to a higher level. Replacements will always cap out at 100 percent of need and all Max TOE settings and TOE limitations will also be followed.

20.5.1.1. SUPPLY/REPLACEMENT SEGMENT LIMITATION CHART

The below chart provides unit supply priority and the percentage of need an item must be below to attempt replenishment during a particular supply/replacement segment.

UNIT PRIORITY	PERCENT OF NEED
4	< 90% (1)
3	< 90%
2	<70%
1	<50%
0	<30% (2)

Notes

(1) This is <110% if the unit did not move in the (1) prior turn and is not adjacent to an enemy controlled hex.

(2) Air Base Units will not receive any supply or replacements if set to supply priority 0.

20.5.1.2. LEADER AND SUPPORT CHECKS

Each phase sub-segment where a unit is eligible to attempt to draw freight to meet an item need,, the unit must pass both an admin leader roll and a support check. If the unit fails either, then this is counted as an Admin Failure (listed on the unit supply detail screen (26.3.27)) and the unit will not receive anything in this sub-segment. If it passes the checks, then it is free to receive all of the items that it qualifies for in the current sub-segment. Once the unit has accumulated four admin failures, no further attempts at replenishment will be made. Anti-aircraft support units attached to cities will never have a range penalty for being far from their HQ units (7.7.4) during admin checks for resupply.

The unit supply detail window (26.3.7) provides information regarding resupply and replacements for that unit.

20.5.2. AIR BASE UNIT RESUPPLY

In addition to the normal supply/replacement segment during the logistics phase, Air base units can receive fuel and ammunition only (no replacements or supplies) during the air execution phase. Each night during the 7 days of the air execution phase, if an air base unit has less than 80 percent of needed fuel or ammunition, it will go through the same prioritized resupply routine as in the logistics phase (20.5.1). Note that air base units set to priority 0 will never receive resupply.

20.5.3. RESUPPLY DURING COMBAT

During each round of combat, units in the combat (both attacking and defending) with less than 60 percent of their needed

fuel and/or ammo or less than 40 percent of their needed supplies will attempt to draw freight to convert to the needed item(s) from nearby depots. Each resupply attempt may lead to receiving up to 20 percent of the total need of the type of supply (fuel, ammo, or supplies) that is needed.

20.6. REPLACEMENTS

The replacement part of the supply/replacement segment simulates the constant flow of men and equipment back and forth from the “home front” and the various production factories, through intermediate locations such as repair depots and hospitals, to the combat zone and the front lines. Ground unit losses, whether combat or non-combat related, while expressed in terms of men, guns and AFV’s, are based on destroyed and damaged ground elements. Ground elements consist of manpower combined with AFVs, combat vehicles or Armament points, which represent all other weapons. The production system builds the individual AFV, combat vehicle or devices from supplies or armament point production and places them in the pools, which is what is reflected on the production screen (26.3.3). During the replacement segment, available manpower is matched with the equipment in the pools to form complete ground elements. Men and equipment from damaged ground elements are included in this process, but are treated somewhat differently.

Approximately (exception: AFV ground elements – see 20.6.4) 25 percent of the manpower and equipment from damaged ground elements are returned to the transit pools each turn and over time move to the active pools and become available as replacements in future logistics phases, representing wounded troops that are lost for short periods of time before being sent back to units, equipment that has to be repaired at non-divisional repair facilities that are then sent back to different units, and men transferred from one unit to another. Isolated units cannot receive replacements.

20.6.1. EXCESS SUPPORT SQUAD GROUND ELEMENTS

Each turn during the supply/replacement segment there is a chance that excess support squads will be swapped for needed rifle squads. This will be a one for swap, but with the excess manpower returning to the pool as a support squad has more men than a rifle squad. This will lower the experience of the rifle squads in the unit. Rather than being converted, in some cases excess support squads may be returned to the manpower pool.

20.6.2. AIRCRAFT AND PILOT REPLACEMENTS

Aircraft Replacements: Air group units may receive replacement aircraft during the replacement segment. The air base unit to which the air group unit is attached must be in supply in order for the air group unit to receive replacements. The National Reserve is always considered to be in supply. The number of aircraft received is based on the amount of that model aircraft available in the production pool and the need of the air group unit, which is defined as the difference between the maximum number allowed and the actual number of ready and damaged aircraft in the air group unit. However, replacements first go to the newest airframes. Reserve aircraft will also be reallocated during the replacement phase (8.1.1).

Damaged aircraft are not returned to the production pool, but can only be repaired at the air base unit to which their air group unit is attached.

Pilot and Aircrew Replacements: Each turn every nation gets a certain amount of trained pilots added to their pilot pool with an experience level equal to the current air national morale. The number of available pilots is displayed in the Commander’s Report as either Free (experienced pilots not attached to an air unit) or Pool pilots (newly trained pilots not yet assigned to an air unit) (26.2.4). If there are not enough of these pilots available, then remaining vacancies will be filled with new pilots with an experience level of half the current air national morale. The number of trained pilots received each turn is listed in the Commander’s Report in the pilots screen under the Air Groups tab. When replacement aircraft are assigned to units, manpower is deducted from the manpower pool to fill the pilot and associated air crew.

20.6.2.1. AIR GROUP UNIT REPLACEMENT PRIORITY

Players can set the priority for air group units to receive replacements, to include designating units that will not receive replacements. Trained Pilots (first chance at getting replacement planes and pilots and will only take trained pilots from the pilot pool), Priority (next chance at getting planes/pilots, will accept untrained pilots), Normal (last groups to get replacements, will accept untrained pilots), Restricted (no replacements). These settings can be changed on the CR air group screen en masse or by group, and also on the air group detail screen where the current replacement setting is shown.

20.6.3. RECEIVING REPLACEMENTS

Several things occur during the replacement part of the supply and replacement segment, to include the return of damaged ground elements, return of excess support squads, refit, and normal replacement. Units must be in supply to receive replacements. Routed units will not receive replacements.

First, 25 percent of all damaged ground elements (exception: AFV ground elements – see 20.6.6) from units are returned to the transit production and manpower pools to be made available to return as replacements. However, only sixty percent of the manpower from the damaged ground elements goes to the transit pool; the other forty percent being placed in the disabled pool. All other things being equal, returning ground elements have a better chance of going back to their original units. Damaged equipment and manpower returned to the pool during the logistics phase are not available immediately to be used as replacements. Although they appear in the pool on the production screen, they actually are put in a transit pool (26.3.3). At the start of each friendly logistics phase, 25 percent of the amount in the transit pool is moved to the available pool. This represents

the lost time from the front of lightly wounded soldiers and damaged equipment.

Next, excess support squads may be converted into rifle squads (20.6.1). Replacements are sent as freight from depots along with supplies, ammo and fuel based on the priority set by the HQ unit that they are assigned and percentage of need (20.5.1). Units in refit mode will have advantages over other like units when receiving replacements (20.6.7). When damaged ground elements are sent back to the pool, freight is placed in a nearby depot equal to one half of the freight tonnage of the ground element. Elements that are returning to the pool do not pay any shipping/rail costs.

20.6.3.1. REPLACEMENT GROUND ELEMENT EXPERIENCE

Replacements coming into units will bring down the average experience for that type of ground element by a small amount. Experience reduction caused by replacements is more based on the relative amount of replacements received. The higher the average experience of the elements, the less the decrease that can be expected. Experience levels in destroyed units being rebuilt will tend to be lower than high experience units receiving a steady stream of replacement ground elements.

20.6.4. GROUND ELEMENT REPLACEMENTS AND TOE

The player can manually set the maximum percentage of TOE for which a unit's ground elements can receive replacements within a range between 50 and 100. The supply priority of the unit (set by HQ unit that it is attached) impacts the chance of units getting replacements, and how much they will get in the same manner as supplies/fuel/ammo (with the exception that replacements will not exceed the MAX TOE value by more than a few elements). The supply priority interacts with the TOE percentage of the unit so that lower priority units will not fully fill up with replacements, even if all freight/manpower/equipment is available, while high priority can reach their MAX TOE (and occasionally exceed the MAX by a few elements). Fortified Zone (7.5.1) and Airbase units (8.2) TOE can be set below 50. In addition, an airbase unit may be set to AUTO Max TOE (the default for any new or captured airbase or set by entering - 1 for the Max TOE). When set to AUTO, the airbase will attempt to align the ground elements to the same TOE percentage used by the aviation support, but not to exceed 100 percent. This setting can be accessed either through the MAX 'xxx' link in the individual unit's detail window or the links under the TOEM column in the Commander's Report (hotkey c). The default maximum TOE setting for most non-airbase units is 100. Some fortified zone units will have lower than 100 Max TOE at the start of a scenario. Most air base units will start with a default Max TOE of Auto. Withdrawing units may not change their maximum TOE setting. Withdrawing units that require rebuilding automatically have their maximum TOE set to 100 percent.

20.6.5. GROUND ELEMENT REPLACEMENT AVAILABILITY

In order for units to receive replacement ground elements, there must be either in the pool, or alternatively for ground elements built from armaments points, there must be sufficient armament points in the pool to build the devices associated with that type of ground element. In the case of damaged ground elements being returned to the pool, if there is already appropriate equipment in the pool to outfit the particular ground element, then no additional armaments points are used and instead the pool of that type of equipment is reduced by one for each element sent as a replacement. Also, there must be manpower in the active pool to match with the equipment and build out the ground element.

However, simply having the ground element equipment and manpower available doesn't mean they will get to the unit that requires replacements. As with the movement of supplies/ammo/fuel to a unit, the availability of freight in depots and the vehicles and fuel required to move the replacements to units will impact the ability for replacements to get to the units. In addition, replacements can be destroyed by enemy air missions either in the depot or while enroute to the unit.

The above can result in ground element equipment and manpower remaining in the pool even though there are units that need them as replacements.

Units may replace a type of ground element in their OB with other types if there are shortages and other suitable equipment is available (for example a Heavy Tank might be replaced by an Assault Gun, a Tank Destroyer or a Medium Tank in that priority order depending on availability and need).

20.6.6. AFV GROUND ELEMENT REPLACEMENT LIMITATIONS AND EQUIPMENT LOSSES

Due to their unique nature, there are several special rules for AFV ground element replacements. The percentage of damaged AFV ground elements returned to the production pools varies based on the ground weather as follows:

Clear - 22.5%

Light Mud - 20%

Heavy Mud - 10%

Light Snow - 17.5%

Snow - 15%

Heavy Snow - 10%

In addition, there is a chance that the equipment from an AFV ground element (i.e. the 'tank', but not the manpower) will be destroyed rather than being returned to the pool. The chance that AFV equipment will be lost increases the further the unit is from a railhead.

20.6.7. REFIT MODE

Units in refit on any depot will act in every supply sub-segment regardless of their TOE in order to try to fill up to their MAX TOE percent (20.5.1), drawing from other depots as well as the one in which they are located. Units in refit located in the same hex as a national supply source depot (type 4) will have access to virtually unlimited freight. The unit still follows priority order to determine

when it attempts to get replacements, but as soon as there is a phase that matches the supply priority of the unit, the unit will get replacements even if it is at a higher TOE level than the sub-phase calls for. Note that the bonus that refitting units in depots receive is only true for replacements, not for supply. They will go through the normal phases to draw supply based on priority. However, a unit in refit with less than 81 percent of need, that passes both admin and support checks will get 40 percent of the supply need instead of just 20 percent, but they are dependent on supply priority limits, unlike the special refit replacement rule above. Since the needs of the unit are constantly being updated as it goes through all the replacement/replenishment phases, what will happen is that in the first phase a refitting unit on the depot will take all the manpower it can get. This will cause the need to go up for the replenishment. In subsequent phases, the refitting unit will try to get the other items it needs as normal with the refitting bonus 40 percent draw instead of the standard 20 percent. The net is it's very possible for a unit on a depot to get all the manpower it needs and be 100 percent of TOE but not have much in the way of needed supply. It may take longer to get those items, so having a high supply priority will help this situation, as will being near depots with lots of freight.

All previously destroyed rebuilding units will appear on the map in refit mode. Units arriving as reinforcements will not be in refit mode.

The mode button in the unit bar (5.2.3) can be used to toggle individual units to refit mode. There are also buttons in the unit bar on HQ units that set all directly attached combat units to the HQ to refit mode, or takes them all out of refit mode. The units tab of the commander's report (hotkey c) also has a refit column that can be used to set units to refit mode. Note that for replacement purposes, all headquarters units and support units are treated as if they are always in refit mode.

20.7. SUPPLY EFFECTS

The further a unit is from a depot, the less supply, replacement and repair will be received. The main impact of low levels of supply is the reduction of movement points through lack of supplies (non-motorized units) or fuel (motorized units). Regardless of their supply levels, however, non-motorized units have a minimum MP allowance of six and motorized units have a minimum MP allowance of one. As units run low on supply they will tend to use up less supply. This causes a greater chance for ground elements to become damaged and destroyed during the logistics phase. Front line attrition is especially higher for units that are running low on supplies.

20.7.1. SUPPLY AND COMBAT

A unit's combat value (CV) will be impacted by supply shortages (15.6.2.5).

The amount of ammo on hand impacts both the overall combat effectiveness, especially of attacking units, as well as the number of shots in combat (15.6.1). Low levels of supplies will impact the ability of a unit's ground elements to recover from fatigue.

Low experience combat elements will expend more ammunition when they fire. Defensive fire will be reduced to conserve ammunition if the attacker is relatively very small (roughly less than half the size of the defender). If an artillery element is firing with its non-main gun devices only, only a small amount of the standard ammunition is used.

20.7.2. MANPOWER STARVATION DAMAGE

Every town, city and urban hexes must trace supply and will suffer a starvation damage percentage equal to the supply path MP cost minus 5. For example, suppose a city has to trace 13 MPs to the nearest railhead due to a combination of destroyed rail, contorted lines and enemy ZOCs. This would result in the city adding 8 percent each week to its manpower damage percentage. Manpower factories recover 3 percent per turn (21.2), so the net increase in damage would be 5 percent per turn. If a town, city or urban hex cannot trace a supply path and is isolated it takes 25 percent starvation damage every turn. Manpower works just like factories in terms of potentially producing less manpower points when damaged (21.2.2). When a town, city or urban hex's manpower reaches 100 percent damage, additional damage may cause the permanent loss of manpower factory points from the hex. Town, city and urban hexes will only take starvation damage if a supplied enemy unit is within four hexes of the hex. Also, town, city and urban hexes won't take starvation damage if they can trace a path of friendly ground hexes to a railhead of four hexes or less, regardless of enemy ZOC or the number of MPs to the railhead.

Logistics Hints:

One of the key items is vehicles (trucks). Track down where your trucks are and that will let you know where your best supply efforts are.

Use the depot priority levels to have high priority ports and depots just behind your front lines. Downgrade the depot priority levels

(0 priority depots will not receive any freight) or even disband depots that are no longer supplying your front line or air units.

Have as much rail converted as you possibly can.

Create depots on or very near your active airfields where possible to cut down on vehicle usage.

Keep Army and higher HQs on depots, preferably in ports, as they draw a lot of supply.

21. PRODUCTION

The production system in Gary Grigsby's War in the West simulates the generation of war material, manpower, fuel and supplies

that flows into each side's supply grid as replacements and supply for the war fronts. All production is based on various factories located in town, city and urban hexes. Resource, heavy industry, oil and fuel factories produce the basic materials used to run the production system and supply the forces.

There are two types of equipment production in the game: historical production for aircraft and AFV/Combat and generic vehicles based on a fixed amount each turn and demand based production for non-vehicle ground elements based on the difference between the non - vehicle TOE strength of a unit and its actual strength.

Every aircraft, AFV and named combat vehicle has a build limit which caps the size its factory can grow to through expansion. The manpower required is generated through manpower factories that represent the availability of able-bodied men for the armed forces. Factories can be damaged and repaired. Though not part of the production system per se, ports and railyards are treated as factories that generate a certain amount of transportation capacity. Once produced, supplies, fuel, oil and resources are transported through the supply grid to town, city and urban hexes where they are stored and can be drawn upon as necessary by the factories located in those particular hexes. Other produced items are held in virtual pools until they are drawn upon to build air group units (aircraft), ground elements, vehicles and transport and cargo ships. Each pool has an active (available) and in transit (currently unavailable) component (26.3.3). Each nation in the game has a set of pools used for building aircraft and ground elements. Polish and Czech factories are considered an integral part of the German pools and their production (and a portion of their manpower) is placed directly in the German pools. They can also produce manpower for the Allies if their manpower centres are occupied by the Western Allies.

Production takes place for each side during their respective logistics phase.

There is no production of any kind during the first player-turn of turn one of any scenario (when the German is the first player than there will be Allied production on turn one). Note that in scenarios where the Western Allies are the first player, there is no Axis turn one.

Production in non-campaign scenarios that do not use the entire map and OOB is reduced for both sides by a certain percentage to account for production going to the off-map forces not involved in the scenario. Information on the production system can be located in the production screen (26.3.3) and the logistics phase event log (26.3.13).

21.1. THE PRODUCTION SYSTEM

Production is conducted by various factories located in town, city and urban hexes. Some factories are located off-map. Each factory point (level) will produce a certain amount of an item each turn if the town, city or urban hex it is located in is connected to the supply grid (20.1) and sufficient basic items are stored at the factory location for local use. There are three basic items required to allow the production system to run; resources, oil and manpower. Resources are required by Heavy Industry factories to produce supplies and by synthetic fuel factories to produce synthetic fuel. Supplies are required by armament, aircraft, AFV and combat vehicle factories to build the equipment for air group units and ground elements. Oil is required by fuel factories to produce fuel to allow motorized units to move and generic vehicles to operate. Manpower factories provide the men that are matched with equipment during the replacement phase to build complete ground elements that flow to the units. There are two types of production rates used for factories. Some factories (Heavy Industry, Fuel, Synthetic Fuel, Vehicle and Armaments) have a static multiplier for each year (1943-45) that is used to determine the amount of production for each factory point. The ratio of basic items required to produce the end product remains the same. For example, if a notional amount of 1000 resources is required to produce 1000 supplies, a one to one ratio of resources to supplies will be required no matter what the multiplier may be. Each other factory type has a fixed production rate that will not change. However, for aircraft, AFV, and combat vehicle factories the number of factory points of each type of factory in each town, city or urban hex will increase over time based on its expansion rate until its build limit is reached.

The current economic system forces supplies and fuel to route to cities to meet their civilian production needs. However, if a city does not have enough to meet its civilian production needs, there is no penalty. Military production occurs before any civilian production.

Oil, resources, supplies and fuel are normally moved over rail as freight. Much of city to city or city to pool deliveries of oil and fuel are conducted by pipelines independent of the rail network, so that half of all oil and fuel delivered in these cases do not use any rail capacity tonnage, however there has to be a rail network link in order for the pipelines to be considered to be functioning. Vehicles may be used to transport a small percentage of city needs that are not able to be moved by rail or sea.

Damaged equipment and manpower returned to the pool during the logistics phase are not available immediately to be used as replacements. Although they appear in the pool on the production screen, they actually are put in a "transit pool". At the start of each friendly logistics phase, 25 percent of the amount in the transit pool is moved to the available pool. This represents the lost time from the front of lightly wounded soldiers and damaged equipment. While the default setting is to show all pools, the production screen can be toggled to display only the amount in the active or transit pools (26.3.3).

21.1.1. RESOURCE PRODUCTION

Resources represent the raw materials, to include coal, used by heavy industry factories to produce supplies and by synthetic fuel factories to produce synthetic fuel. Resources represented by coal are also consumed for rail transport (14.2). Each resource factory point will produce 1000 tons of resources per turn. Resources move as Freight just like other production items and if rail and/or port capacity is available, can be transported from all player controlled resource "factories," to include

those in occupied countries. Resource production is modified by the following multipliers:

RESOURCE PRODUCTION MULTIPLIER			
Year/Nationality	1943	1944	1945
German/Czech/Polish	1.0	1.0	1.0
Axis Allies	1.0	1.0	1.0
Western Allies	3.0	4.0	4.5

21.1.2. HEAVY INDUSTRY (SUPPLIES) PRODUCTION AND ALLOCATION

Heavy industry (HI) factories take resources and use them to produce supplies, which represent not only all the materials used to build equipment, either directly in individual factories or through the production of armament points, but also the general supplies and ammunition used to supply units. Each HI factory point will produce a notional amount of 500 tons of supplies per turn at a cost of 500 tons of resources. HI production is modified by the following multipliers:

HEAVY INDUSTRY PRODUCTION MULTIPLIER			
Year/Nationality	1943	1944	1945
German/Czech/Polish	2.2	2.7	2.2
Axis Allies	1.0	1.0	1.0
Western Allies	3.0	4.0	4.5

For example, in 1944, 2000 tons of resources will be required to produce the maximum of 2000 (4.0x500) tons of supplies per heavy industry factory point for the Western Allies. In 1945, 2250 tons of resources will be required to produce the maximum of 2250 (4.5x500) supplies per heavy industry factory point.

21.1.3. ARMAMENT PRODUCTION

Armament factories take supplies and use them to produce armament points, which are maintained in a virtual pool. Armament points are drawn upon to build devices to equip ground elements at a fixed number of armament points for the devices in each ground element. For example, the build cost of the devices for an 88mm Anti-Aircraft Gun ground element is 55 armament points, which includes one 88mm AA Gun and eight 7.92mm Kar 98 Rifles for the ground element's eight men, which will be matched with the devices during a replacement segment to complete the ground element. Note that armament points are not used to produce aircraft, AFV or combat vehicles built at individual factories. Ground elements that use devices built using armament points have an 'A' listed in the "CAPACITY" column of the production screen (26.3.3) and armament factories and production information is listed under the "SPECIAL" section. Each Armament factory point will produce a notional 250 armament points at the cost of 50 tons of supplies. Armament point production will be modified by the following multipliers:

ARMAMENT PRODUCTION MULTIPLIER			
Year/Nationality	1943	1944	1945
German/Czech/Polish	3.5	5.0	5.0
Axis Allies (1)	1.0	1.0	1.0
Axis Held Countries (2)	1.0	1.0	1.0
Western Allies	2.0	3.0	3.0

Note

(1) Axis Allies (Rumania, Hungary, Finland, Italy, Slovenia, and Bulgaria) produce armaments for their own pools. None of this production goes to Germany.

(2) Includes armaments factories in Axis held France, Belgium, and Netherlands, This production goes directly to the German pool and built numbers.

To continue the example from above, in 1943 110 tons of supplies will be required to produce the maximum of 550 tons of armament points per factory point for the Germans. In 1944, 250 tons of supplies will be required to produce the maximum of 1250 tons of armament points per factory point.

While there is essentially no limit to the number of smaller crew served weapons that can be produced in a turn, there is fixed production for towed weapons and larger mortars. For example, the build limit of the German 75mm anti-tank gun is 125 per turn compared to 55 per turn for the 105mm howitzer. The build limit is not absolute as there is a chance if production so far in a game has been below the build limit that the build limit may be exceeded in a turn. The build limit for a particular weapon is displayed in the ground element detail window that can be accessed from the production screen listing.

Artillery (using on demand production) elements will not be produced for replacements if the element is not in a unit's OB. Example: If a unit with 37mm AT guns changes its OB to one that requires a 47mm AT gun, no new 37mm AT guns will be produced to use as replacements (only 37mm AT guns already in the pool will be used). This will reduce the amount of production of soon to be obsolete equipment.

Elements built by armaments points will often be built ahead of their being used in order to stockpile the elements for future use. Being in demand by units in the field can increase the likelihood that elements will be built to stockpile.

21.1.4. SYNTHETIC FUEL PRODUCTION

Synthetic Fuel factories take resources and produce synthetic fuel, which is added to the overall fuel stores pool. There are no Western Allies synthetic fuel factories. Each synthetic fuel factory point will produce a notional amount of 500 tons of fuel per turn at a cost of 2500 tons of resources. Synthetic fuel production will be modified by the following multipliers:

SYNTHETIC FUEL PRODUCTION MULTIPLIER			
Year/Nationality	1943	1944	1945
German/Czech/Polish	1.35	1.35	1.35
Axis Allies	1.0	1.0	1.0

V1.00.44 – 9 June 2015

Formula Adjustment - Made it easier to cause high amounts of damage to fuel, syn-fuel, and railyards.

21.1.5. OIL AND FUEL PRODUCTION

Oil factories (oil fields) produce oil that is then either stored or used by Fuel factories (refineries) to produce fuel, which is also stored in town, city and urban hexes on the supply grid until drawn upon. The normal production rate for oil factories is 1000 tons of oil per factory point per turn. Each fuel factory point will produce 250 tons of fuel per turn at the cost of 500 tons of oil.

Oil and fuel production is increased by the following multipliers for oil and fuel factories:

OIL AND FUEL PRODUCTION MULTIPLIER			
Year/Nationality	1943	1944	1945
Western Allies	2.0	3.5	3.5
Axis	1.0	1.0	1.0

V1.00.44 – 9 June 2015

Formula Adjustment - Made it easier to cause high amounts of damage to fuel, syn-fuel, and railyards.

21.1.6. VEHICLE PRODUCTION AND REPAIR

Vehicle factories use supplies to produce generic vehicles, which are placed in the motor pool (20.1.7). From there they are drawn to meet the needs of either the motor pool or individual units. Each vehicle factory point will produce 10 vehicles per turn at the cost of 50 tons of supplies. There are no vehicle production modifiers. Note that vehicles produced by Axis Allies will be placed in the German Motor Pool.

All vehicles, also known as trucks, are considered as 2.5 ton equivalents. Individual vehicles that are damaged are returned to a virtual pool for repair. Once repaired, they are added back into the motor pool. Repair takes place during the logistics phase. The Western Allies vehicle repair rate is thirty three percent per turn. The Soviet vehicle repair rate is twenty percent per turn. Due to a lack of standardized equipment, the Axis vehicle repair rate is ten percent per turn.

V1.00.44 – 9 June 2015

Formula Adjustment - Increased Allied vehicle repair to 50% per turn.

21.1.7. AIRCRAFT, AFV AND COMBAT VEHICLE PRODUCTION

Aircraft, AFV and combat vehicles are built at individual factories by using supplies, with one item being built for each factory point. For example, assuming sufficient supplies are available, the JU88A factory in Rostock, with a capacity of ten factory points, will build ten JU88A's every turn. Aircraft, AFV and combat vehicles include installed devices, but will not become complete ground elements until they are matched with manpower for the crew, during the replacement segment. Each item has a build cost that determines how many supplies it takes for production. The cost to build an aircraft is its build cost divided by 20. The cost to build an AFV or combat vehicle is its build cost divided by 10. For example a FW 190A has a build cost of 484, so it would require 24.2 tons of supplies to produce one such aircraft, to include four 20mm cannon, one 250 KG Bomb and two 300 litre drop tanks as installed devices as well as integral aircrew. A Tiger AFV ground element

has a build cost of 673, so it would require 67.3 tons of supplies to produce one such AFV, to include one 88mm gun and two 7.92 machine guns as installed devices. Once produced, each aircraft of a specific type is placed in a separate pool until it is drawn upon as a replacement. AFV and combat vehicles go to their specific AFV/Combat Vehicle pool until the system determines that both the need exists to build that type of ground element and sufficient manpower is available. Note that ground elements that have a build cost of 9999 will never be produced.

21.1.8. AIRCRAFT, AFV AND COMBAT VEHICLE FACTORY EXPANSION AND BUILD LIMIT

Aircraft, AFV and combat vehicle factories may be able to increase their capacity by adding additional factory points over time. Each type of factory has an expansion rate listed in that item type's city production list that determines how many factory points will be added. An expansion rate of one or greater will increase that capacity of each factory of that type by that number every turn during the logistics phase for that side. Factories will only expand if they are completely undamaged. Factories will not grow in size before the starting production date for the equipment being built at the factory. Factories with a non-zero build limit should not exceed their build limit. Factories that are set to values larger than their build limit will be set to their build limit during the next production cycle.

21.1.8.1 BUILD LIMIT

Each type of Aircraft or AFV/combat vehicle ground element equipment has a build limit that will cap expansion at a fixed number of items per factory location per turn. For example, on February 5 1944, there is one factory that produces the King Tiger, which has a build limit of 4 and an expansion rate of 1. The current capacity of the factory is 2. Assuming no damage, the factory will reach its build limit of 4 in 2 turns.

21.1.9. FACTORY UPGRADES

Each type of aircraft or ground element equipment factory has a start production date (first year/first month) and may have a stop production date (last year/last month) Factories with a stop production date will disband when the end of the last month in the last year is reached. Production of new types of aircraft or ground element equipment can occur in two ways. Some new types will appear as new factories when their start production date is reached. For example, the German Panther A medium tank will commence production in September 1943 with a newly built factory in NE Berlin. Other new types will start production as a result of an existing type of factory being upgraded. Multiple upgrades of a factory to a new type are possible over time, with the old type ceasing production when the new type starts. Continuing the example, the Panther A factory in NE Berlin, with a build limit of 11 and an expansion rate of 1, will be upgraded to produce the Panther G, with a build limit of 10 and an expansion rate of 0, in May 1944. Upgrade of a factory only happens after an aircraft or ground element reaches its final month of production (until then it keeps producing the older item).

The list of equipment pools in the production screen (26.3.3) is annotated to reflect their current status as follows:

No longer in production (#)

Currently in production (no symbol)

Not in production yet (**)

The only factories that will be considered physically present in town, city and urban hexes are those currently in production. Selecting an aircraft or ground element equipment listed in the production screen will bring up the city production window (26.3.4), which will include information on any upgrades planned for that type of factory.

21.1.10. EQUIPMENT DOWNGRADES AND SWAPS

A ground element or air group unit can downgrade to a specific type of equipment if the production system determines that there is a shortage of current equipment that is unable to keep up with the demands of all of the units using that equipment and there is an excess of older equipment in the pool. In this case a unit may downgrade its aircraft or equipment to the item that is back along the upgrade path. For example, a German fighter air group unit that had upgraded from the Bf 109F-2 to the Bf 109F-4, but then took heavy losses, might downgrade back to the Bf 109F-2 if the Bf 109F-4 pool was low and there were excess Bf 109F-2's available. Under similar circumstances, Anti-Tank ground elements equipped with 75mm AT gun devices might downgrade back to the 47mm AT gun device. In the swap sub-segment, the computer may also change out existing ground elements with ground elements of the same type (7.2.4).

21.1.11. SCRAPPING OF OBSOLETE EQUIPMENT

Equipment that is no longer produced will begin to be removed from the production pool by scrapping after the last year of availability. Scrapping of obsolete equipment does not happen unless the equipment is no longer in a unit and no longer in the current TOE of a unit. If these conditions are met, then an item can be scrapped. AFVs will not be scrapped if they are being used by any units in the game. Ground elements that have a build cost of 9999 will no longer add armament points to the pool when scrapped.

21.1.12. EQUIPMENT EXPORTS

The export function in WITW includes both the sending of equipment from Germany to its Axis Allies and the conversion of equipment within the armed forces of each side so that factories don't have to be setup for every variant piece of equipment. For example, a factory may only produce Me 262A fighters, but a certain number will be automatically be converted into the Me 262A-1a/U3 and then placed in the appropriate pool. When exporting ground elements or aircraft, no more than one quarter of what is currently in the pool will ever be exported on a turn. When the East Front Option is not enabled, one third of German aircraft exports will not occur (23.1.1).

V1.00.13 – 26 January 2015

Exports - Allied/Axis equipment exports are now impacted by the production usage modifier.

21.13. MANPOWER PRODUCTION AND MIGRATION

Population is a permanent characteristic of a town, city or urban hex and is provided for reference. A population point represents 50,000 people (in the town, city, urban hexes or surrounding area).

Manpower, represented by factories in town, city or urban hexes, is produced at a variable rate dependent on nationality and the year. Manpower factories can be damaged, destroyed, or can migrate to other town, city and urban hexes.

21.13.1. MANPOWER PRODUCTION

Each nation has a separate manpower pool. Polish and Czech manpower generated for the Germans is placed directly into the German pool, so the displayed Polish and Czech manpower pools are only relevant for the Western Allies. The number of men added to each nation's manpower pool is determined each turn by taking the number of available manpower factory points times a manpower production multiplier. Manpower is maintained in the pool until the system draws men from it to match with equipment to build ground elements. Manpower multipliers are as follows:

MANPOWER PRODUCTION MULTIPLIER			
Year/Nationality	1943	1944	1945
Germany(1)	6	3	1
Axis Allies	1	1	1
United States	3	2	2
Britain	1.5	1.0	1.0
Other Western Allies	3	2	2
France	3	2	2

Note

(1) Includes Axis Czech and Poles, but only ten percent of this manpower (by location) is actually placed in the German pool.

Manpower production of Allied controlled "France" manpower centers is listed in the Free French built number on the production screen and the manpower is placed in the Free French pool (26.3.3). Whenever Paris is allied controlled, Free French manpower production is doubled (including liberated French population centres that produce manpower for the Free French). In addition German manpower production is multiplied by 1.5 from the time Paris is allied controlled until the end of 1944.

The Western Allies Italy pool receives manpower from Italian cities controlled by the Allied player. The Free French pool receives manpower from any city in France controlled by the Allied player.

In addition, each turn one percent of the manpower listed as disabled will return to the manpower pool. Although only displayed as a total for all Western Allies on the loss screen, the system actually tracks two separate Allied disabled pools; USA and 'Other Allied.' All disabled USA manpower is returned to the USA manpower pool. The return of disabled manpower to the Other Allied pool is split up as follows: India 6%, Poland 5.6%, France 17.7%, Canada 17.7%, and Britain 53%. Axis returning disabled manpower are split 98% to Germany, 2% to Italy. After the Italian surrender it becomes 100% to Germany.

V1.00.00 – 21 November 2014

Changed German manpower multiplier to 5 in 1944 (was 3).

V1.00.07 – 19 December 2014

Rule Change - Changed German manpower multiplier to 3 in 1945 (was 1).

21.13.2. MANPOWER EVACUATION AND MIGRATION

Manpower factory points in German nationality town, city and urban hexes may evacuate/migrate when the hex is captured by enemy units. For purposes of migration, each manpower factory point represents 50,000 people. There is no limit to the amount of migration that can occur in a turn. The more manpower factory points in a hex, the better the chance some will migrate. When manpower factory points migrate, they will try to move to another town, city or urban hex (including off map cities) at least 14 hexes away from an enemy unit. Town, city or urban hexes re-captured by friendly units will not undergo migration. Only German manpower can migrate, but all manpower can be damaged or destroyed.

21.13.3. MANPOWER FACTORY DAMAGE AND DESTRUCTION

Manpower factory points can be damaged and/or destroyed whenever combat occurs in a town, city or urban hex, and whenever control of a town, city or urban hex changes. Manpower factories can also be damaged and/or destroyed through lack of supply (20.7.2).

V1.00.07 – 19 December 2014

Increased night bombing accuracy against manpower targets.

21.13.4. LOCAL MANPOWER RECRUITMENT IN ISOLATED AREAS

Manpower production from a town, city or urban hex that is in an isolated state will continue at a reduced rate, but will not be added to the global manpower production pool. Termed local recruitment, manpower production will be halved and stored in a separate pool. This separate manpower pool is retained even if the hex is captured. If the owning nation regains control of the hex and it is in supply, the stored manpower will be added to the global production pool to represent the drafting of recruits from a newly liberated region.

21.1.14. PORT AND RAIL YARD CAPACITY

Ports and Railyards are treated as factories in terms of capture, damage and repair, with the exception that ground combat in a hex does not cause any damage to a port. Damage to railyards and ports will reduce their tonnage capacity and ports with five percent or more damage will only operate at one half of their normal capacity. Ports and Railyards play only a peripheral part in the production system, but are a critical part of the supply grid and serve as logistics hubs for naval and rail transportation (14.2, 16.2). Ports will automatically attempt to secure supplies to be kept at the city hex where the port is located (20.1).

21.2. FACTORY CAPTURE, DAMAGE, AND REPAIR

Factories will be captured and damaged or destroyed when the city hex that they are located in becomes enemy controlled. Factories can also be damaged by strategic bombing. Damaged factories will be repaired automatically, but the player can use priority repair to focus additional repair efforts on specific factories. Port and Railyard factories (levels) in hexes with depots have an automatic priority repair function. Manpower factories have special damage rules covered in section 21.1.13.3.

21.2.1. CAPTURED FACTORIES

Factories in captured town, city and urban hexes can be damaged or destroyed. With the exception of manpower, port, railyard, resource, heavy industry, fuel, syn fuel and oil factories, all other factories in captured hexes are destroyed and permanently removed. Those not removed will be damaged. With the exception of manpower factories (21.1.13.3), factories that remain will receive a variable amount of damage (damage will be added to the factories equal to $25 + \text{random}(75)$ percent (not to exceed 100 percent)). In addition, oil factories are always set to 100 percent damage when captured.

Captured factories will commence producing once damage has been repaired to be less than 50 percent, assuming the hex is linked to the applicable supply grid. Captured factories will produce at the rate of their actual nationality.

Exception: Since some captured German nationality factories count as strategic bombing victory points, German oil, fuel, syn fuel, heavy industry and manpower factories are set to 100 percent damage when captured and are not repaired in order for the victory points to be calculated properly (25.1.1). Railyards, ports and resources do not score VP points so they can be repaired. When temporary ports are captured they are destroyed and removed from the map.

21.2.2. FACTORY DAMAGE

In addition to capture damage, all factories can be damaged by the strategic bombing (bomb city) air mission (17.3.4).

Damage is applied to an entire factory, not to individual factory points. The damage level of a factory is also the probability that the factory will not produce on a given turn. For example 100 damage means no production, while 25 damage means 25 percent chance of no production and a 75 percent chance of full production. For example a FW-190 aircraft factory with 12 factory points, or size 12, which had 40 damage would have a 60 percent chance of producing 12 aircraft and a 40 percent chance of producing 0 aircraft. Note that railyard and port damage is treated differently than other factories (21.1.14).

V1.00.07 – 19 December 2014

Adjusted factory bombing damage. Reduced damage rate when factory gets to >50% damaged.

21.2.3. FACTORY REPAIR

Factories will automatically repair themselves during the logistics phase at a rate determined by the type of factory. Factories located in isolated hexes cannot be repaired. Note that Manpower is repaired like other factories to reflect the disruption effects of general bombing on the population. Not only is Manpower less effective at production, plus, manpower has to be put to work repairing damage and taking care of the displaced population. Manpower repair represents the reduction of disruption effects over time.

TYPE OF FACTORY	REPAIR RATE PER TURN
Oil, Resource	1%
Heavy Industry, Synthetic Fuel, Fuel	2%

Armament, Vehicle, Manpower, Aircraft and AFV/Combat Vehicle, Port, Railyard	3%
V-Weapon Sites	5%

There is an adjustment to the repair percentage based on the size (number of points) of the factory as follows:

- (1) If factory size is 1-3, multiply basic repair rate x3
- (2) If factory size is 4-6, multiply basic repair rate x2

V1.00.44 – 9 June 2015

Formula Adjustment – The most that can be repaired per turn by priority repairs is now 20% of the damage (was 25%).

21.2.4. PRIORITY FACTORY REPAIR

The priority factory repair functions allows player to use construction support units to focus repair efforts at the cost of admin points. Players may pay 1 AP and set a factory for priority repairs by accessing the city detail window (26.3.28) from the general information and city/airfield box (5.1.5) and then selecting the damage level of the factory they desire to institute priority repair. An asterisk indicates that priority repairs have been instituted and selecting the damage again will terminate priority repairs.

Setting a factory to priority repairs will result in HQ units automatically assigning construction support units to the hex during the logistics phase. This is the same process as automatic rail line repair (14.2.7.1), to include there being a limit to the distance that the automated construction units will operate from the HQ unit that they are attached, which is based on command range (7.7.4).

Priority repairs take first priority over automatic rail line repair. Construction support units will go to priority repair locations first before going to fix rail hexes. A support unit may only work on one factory per turn and no more than 25 percent of the damage to a factory can be repaired during the logistics phase. As long as there are less than 3 units in the hex, additional repair units may be called to the hex if the total net repair value of all the construction units that would be working on the factory are less than one-quarter of the damage percentage. Also, since regular repairs are conducted after priority repairs, and they happen even when priority repairs have been completed, once the damage level gets very low, continuing priority repairs can be very inefficient, with only a small amount repaired by priority repairs.

The steps for determining the amount repaired by Priority repairs is as follows:

Determine repair value of construction units – base value is 2xEngineer/Labor squads (modified down by fatigue) + about ½ per support squad (also modified down by fatigue) all divided by 6 (typical German unit has value of 13, Allied has value of 28)
 Multiply base value by the factory normal factory repair rate that would be used for normal repairs (i.e. size 6 HI factory would be 4% per turn).

Weather: If Heavy Snow divide by 4, if Heavy Mud divide by 3, if Snow divide by 2.

LIMIT: Priority repairs may never repair more than a quarter of the damage of a factory in a single turn.

Example: Standard German unit (13 value) repairing a HI size 6 factory in Snow would repair $13 \times \frac{4}{2}$ or 26%, however, the amount repaired would be limited to just 1/4 of the amount of damage (less than 26%). Let's assume the factory had 40% damage. 1/4 would be repaired by the priority repairs (down to 30%), and then in the normal repair phase another 4% would be repaired. So the factory would end the turn at 26% damage.

21.2.4.1. PORT AND RAILYARD FACTORY PRIORITY REPAIR

Hexes with depots will automatically attempt to find construction units to attempt priority repairs on ports and railyards in the hex. This does not cost APs and it will not have the factory item flagged with an asterisk (only player directed priority repairs will flag the factory item in the city detail window). This function is lower priority than any player directed priority repairs. Both the HQ unit supplying the construction unit and the location being repaired must be in supply.

Damaged ports and railyards at depots will only get automatic priority repair from a construction support unit if the item is damaged at over 30 percent, (if a port and railyard, then if the combined damage is over 30% then it will try to get help). Also, for repairs at depots, a construction unit can split it's time to help repair both the port and the railyard, with the port getting the priority between the two.

21.3. PRODUCTION TO OTHER FRONTS

Since they were fighting on multiple fronts, not all Axis production is available for deployment on map to the Western Front. In non-campaign scenarios, only a portion of production is available for both the Axis and the Allies to account for production going to the off-map forces not involved in the scenario.. Thus a certain amount of production may be automatically unavailable. The affected factory types are heavy industry (supplies), fuel, synthetic fuel, manpower, armaments, vehicles and individual aircraft, pilots and AFV/combat vehicles. Resources and oil are not affected. The production screen (26.3.3) will list the percentage of production that will be available to the player. Total capacity will be listed, both on the production screen and in the individual City Production windows (26.3.4), but only production that actually is available to the player in the scenario will be displayed in the "Built" column and in the totals on the right hand side of the production screen. The Logistics Phase Event Log (26.3.13) will also only list production available to the player.

In campaign scenarios, the Allies receive 100 percent of their production. When the East Front option is enabled (23), all production is available to the Axis player. If the East Front Option is not enabled, all Axis aircraft, fuel and synthetic fuel production is multiplied by .6, while all non-aircraft/fuel/synthetic fuel production is multiplied by .4 to determine what is available for the Western Front (the production screen will display a production modifier for the Axis countries of 40%). This essentially means that 40 percent of German aircraft and fuel production is sent east, while 60 percent of everything else is sent east.

V1.00.13 – 26 January 2015

Minimum West Front replacements – When using the East Front Control Option, at the start of each German logistics phase, 20% of the manpower in the active pool at that moment is reserved to be used by Western Front units only (i.e. this manpower cannot be used for replacements for units on the Eastern Front).

21.3.1. GERMAN ARMAMENT POINTS TO AXIS ALLIES

If Germany has greater than 100,000 armament points at the start of the production segment of the logistics phase, any Axis allied nation with less than 1,000 armament points will be provided 1000 armament points from the German armament pool.

21.4. PRODUCTION CHART

The production chart overleaf graphically displays a representation of the production system.

22. WEATHER

Weather for each hex is determined once a turn during the Allied logistics phase. Climate Zone determines the dominant air weather condition based on time of year. Weather Fronts are automatically generated and move across the map area, which can result in a change in the dominant air weather condition. The weather system has both a ground condition and an air condition, while river hexsides are also impacted by ice levels. Ground conditions in each hex are determined by the amount of moisture present due to the current air weather condition. In addition, the air weather condition impacts flying conditions. The ground condition determines MP costs for movement and the impact on attacking CV values in ground combat. The air condition impacts air missions and can drop rain or snow into hexes (creating mud and snow levels). In the Nat/Weather tab of the game editor tables are provided for each scenario that display the standard weather used in each climate zone, movement and combat effects of different ground conditions, river crossing costs under different ice levels, and information on each of the five types of weather fronts, to include their impact on the base weather. This information can be accessed by selecting the editor in the main menu, then loading Generic Data, selecting Nat/Weather tab, and then selecting Edit Weather Effects. The tactical movement point cost chart details the impact of weather and ice levels on ground movement and river crossings (14.1.6).

The doubling of a Mountain unit's CV in a mountain hex is not affected by weather conditions (15.6.2.3).

22.1. CLIMATE ZONES AND DOMINATING WEATHER CONDITIONS

Weather is determined from an overall map that is greater than the actual playable area of the game. Each hex in the overall map area has one of eight different climate zones determined by historical geography. The climate zones are Polar, Humid Cold, Humid Warm, Temperate Humid, Temperate Dry, Arid Steppe, and Arid Desert. For each climate zone, there is a dominating air weather condition determined by the time of year. For example, in the first part of May, the dominating air weather condition in a temperate humid climate zone hex is rain, while the dominating weather condition in a temperate dry climate zone hex is clear. The dominating air weather condition in a hex can be modified by weather fronts.

22.1.1. WEATHER FRONTS

There are five types of weather fronts that can enter the map and alter the dominating air weather condition in a hex depending on the month of the year and the dominating weather condition. Weather fronts will impact all hexes they moved through during the turn (i.e. the hexes where it started on the previous turn and those where they are in the current turn, and hexes in between).

The fronts are Polar Maritime (mP), Tropical Maritime (mT), Arctic Maritime (mA), Polar Continental (cP) and Tropical Continental (cT). For example, the Tropical Maritime front (mT) will change a hex that would have been Rain to Cold in January or February, to Heavy Rain in March or October to December, and would have no effect from April through September. The mT front will always change Clear to Rain at any time of the year. Existing fronts are displayed on the weather screen (hotkey w) (26.3.6) and data on each type of front, its relative frequency of occurrence, and its effect on the dominating air weather condition can be found in the game editor.

22.2. AIR WEATHER CONDITIONS

Air weather conditions are the basis for the overall impact of weather on a hex. Air weather conditions in a hex are determined by the climate zone and time of year, which results in a dominant air weather condition. This air weather condition in a hex can then be modified if a weather front moves through that hex during a turn (22.1). The current air weather condition determines the amount of moisture (water level) in a hex, which over time will determine and modify the ground condition and ice level. In addition, the air weather conditions over an air mission's flight path are used in determining the amount of cloud cover and the overall air mission weather. There are six Air Weather Conditions as follows:

AIR WEATHER CONDITION	REMARKS
Clear	
Rain	Light Rains/Summer Rains, Additional cloud cover
Heavy Rain	More overcast and rain, Very Bad Air Mission Weather
Cold	Light Snow, Clear sky much of the time
Snowfall	More regular Snowfall with more Cloud Cover, Bad Air Mission Weather
Blizzards	Snow storms and very low temperature. Very Bad Air Mission Weather

22.2.1. AIR MISSION WEATHER

Air mission weather is classified as very poor, poor, fair, good, or excellent, and is determined by the aggregate cloud cover over a particular air mission's entire flight path. The determination of the percentage of cloud cover in a particular hex is influenced by the current air weather condition, with heavy rain, snowfall, and blizzards normally resulting in worse weather. The air weather condition in each hex sets a percentage of cloud cover for the hex. There is some randomness in this setting, but the worse the air weather condition, the more the cloud cover effect. Weather value is scaled from 0 to 100, with the higher the worse and the better chance of adverse effects, to include mission cancellation (26.3.34). Once the mission flies, the weather in the target area is going to greatly impact the effectiveness of the airstrike (bombing or recon). Ground Support missions in particular will be significantly reduced during bad weather such as heavy rain, snowfall, and blizzard. In addition to decreasing the effectiveness of air missions, bad weather can result in scrubbing of individual aircraft from missions and even entire air missions (16.1.5).

22.3. GROUND WEATHER CONDITIONS

The ground condition in a hex, when combined with the type of road system present, determines both whether there is an additional tactical ground movement cost (14.1.6), which can affect supply, and whether the combat value (CV) of attacking units are modified (15.6.2.4). There are six Ground Conditions; clear, light mud, heavy mud, light snow, snow and heavy snow. Ground conditions are determined by the current air weather condition and the cumulative amount of moisture (water level) in the hex. For example, consecutive periods of heavy rain will turn clear ground condition to light mud and then heavy mud. Cold, snowfall, and blizzard air weather conditions, will freeze the moistures and result in varying amounts of snow.

The attacker CV value modifications due to weather are based on the ground weather conditions in the hex occupied by the attacking unit at the time of combat. This is also true for attacker reserve units that are committed to the battle (CV weather effect is based on the hex they are physically in on the map) and support units that are directly attached to a combat unit. Attacker support units in HQs are affected by the ground weather in the target hex.

22.3.1. ROAD SYSTEMS

Each Country is rated for the quality of its road system, Good, Average or Poor. The quality of the road system impacts how the ground weather condition impacts movement (14.1.6) and combat (15.6.2.4). Basically the better the road system, the less impact weather has on movement and ground combat.

22.4. MOISTURE AND WATER LEVELS

The following table shows the impact of various air conditions on the moisture in a hex, and what moisture levels equate to in terms of ground conditions.

TYPE	MOISTURE (WATER)	NOTES	MOISTURE EFFECTS
Clear	Water level decreases 2-7 each turn	Thaw: water+=snow,snow=0	Clear = water 1 and Snow 1

Rain	Changes from - 1 to +2 each turn / If water is >3 than 1 is subtracted / If water is >7 then an additional - 1 / Water level can't be over 5	Thaw: water +=snow, snow=0	lt mud= water 2-5
Heavy rain	Increases 1-4 per turn	thaw: water +=snow, snow=0	heavy mud= water 6 to 9
Cold	Snow level in hex changes - 1 to +2 each turn / can't be over 6	water frozen - has no effect	lt snow = snow 2 to 3
Snowfall	Increases 1-3 each turn / can't be over 7	water frozen - has no effect	snow= snow 4 to 7
Blizzard	Increases 2-4 each turn	water frozen - has no effect	heavy snow = snow 8 to 9

V1.00.07 – 19 December 2014

Rule Change - Heavy rain was incorrectly stated in the manual as adding 1-4 water to each hex per turn. It was actually adding 2-4. However, this has been changed so that in good road areas it adds 1-2, average road areas 2-3 and poor road areas 2-4. This is intended to simulate better drainage in more developed areas.

22.4.1. IMPACT OF AIR WEATHER ON SNOW LEVELS

Snow in a hex will never be 8 or 9 unless the air condition for the hex is Blizzard (i.e. worst ground condition is not possible unless there is active Blizzard in the hex). Snow in a hex will never be 7 unless the air condition is Snowfall or Blizzard. All Snow converts to water if air weather is clear, rain or heavy rain.

22.4.2. ICE LEVELS AND FROZEN LAKES AND RIVERS

Ice levels range from zero (none) to ten (frozen solid). Ice levels will never exceed ten or go below zero. Ice levels from one to four for minor rivers and from one to seven for major rivers are defined as loose ice with and will have an impact on movement costs that is worse as the ice level increases (14.1.6). Minor rivers with ice levels five through 10 are defined as frozen as are major rivers with ice levels eight through ten. Frozen rivers will have little impact on movement costs. There is no ice in full water hexes in War in the West. Ice level is determined individually for each river hexside using the warmest weather of the two hexes to which a river hexside is adjacent with changes as follows (from warmest to coldest):

Clear: - 3
Rain: - 2
Heavy Rain: - 2
Cold: 0
Snowfall: +1
Blizzard: +2

22.4.3. ICE LEVELS AND MOVEMENT COSTS

As with ice free movement across rivers, MP costs are different depending on whether the unit is moving into an EZOC or not (14.1.6). Note that ice level costs are cumulative with the regular cost to move or attack over river hexsides. For example a motorized unit crossing a major river hexside with ice level 3 into an EZOC would expend an additional 22 MPs. Frozen ice levels (5 or more for minor rivers, 8 or more for major rivers) causes all river hexsides (including impassable) to have much less impact on movement or combat (and this is the only time a unit can attack across an impassable river hexside).

As ice conditions do not occur in full water hexes, tactical movement over such hexes (small lakes, large lakes, Baltic, Mediterranean, etc.) is not allowed, regardless of ice level. In addition, strategic naval transport or amphibious transport is not affected by ice levels.

22.5. WEATHER DISPLAYS AND GRAPHICS

The Weather Screen (hotkey w) (26.3.6) allows the player to toggle on information for the Climate Zones, the Ground weather conditions, the Air weather conditions or the Road Systems.

The weather condition in each hex can be found in the hex pop up text (5.2.1). Information can also be found on the Weather Screen. The weather can also be seen in the artwork on the main map. By using Shift-w (or the Map Information button) the player can toggle between showing both Air and Ground conditions, Ground only, Air only, or no weather art on the map, with the button graphic displaying the current state.

23. THE EASTERN FRONT

In campaign scenarios, the player has the option of allowing the Eastern Front (EF) to play out historically (East Front Control Off) with no control over the transfer of units between the East and West or taking control of German forces on the Eastern Front (East Front Control On), to include manually determining the transfer of units between East and West. In non-campaign scenarios, the Eastern Front will play out as it did historically during the time period of the scenario. East Front control can be checked on or off in the Game Option screen (3.3.3), but cannot be changed once a game begins. The default setting has East Front control enabled. In either case, the progress of the Eastern Front can be viewed by toggling on the view enemy hexes map information tab button (hotkey e), which will darken hexes that are considered Soviet controlled.

V1.00.44 – 9 June 2015

Formula Adjustments - East Front Option Changes - Increased German casualties in the East Front box. Germans also now use more fuel/supplies for activities in the East Front box.

V1.00.48 – 12 July 2015

East Front Option – Made a few more balance adjustments to the East Front option that changes the amount of Soviet potential received at different times during the war. While doing this fixed a bug in the AI that was not giving the German AI full credit for some units sent to the East Front box in 1943. With all the East Front changes in 1.00.44 and these mostly minor tweaks in 1.00.48, it's expected that the German player will need to send a significant number of units east periodically during the war as they did historically. This is needed in order to keep the Soviets from scoring significant points for the Allied player and prevent an early end to the game.

V1.01.01 – 30 September 2015

Changes to the Eastern Front Option:

- East Front APs - In games where the EF option is on (only campaign games), the Axis player will receive 1 additional AP point per turn.
- East Front air groups that have the potential to upgrade will only do so 10% of the time.
- East Front air groups that are sent west now only have pilots equal to their number of aircraft when they arrive in the west.

23.1.1. AUTOMATIC SOVIET ADVANCE (EF CONTROL OFF)

When the EF Control Option is not enabled, the Soviet/Axis frontline will automatically move over time from the east edge of the map toward Berlin, following a roughly historical schedule. As hexes are converted from Axis control to control by the Soviet Union, they will be displayed on the map area as neutral territory (6.2.2). Berlin will be captured on the first turn of May, 1945 and the campaign scenario will end at that time. Only Axis controlled hexes will be converted as Allied controlled hexes will remain Allied, and hexes in Yugoslavia and Italy will not be converted to Soviet control. If there are any Axis units in the hexes being converted to Soviet control, then the Axis units will perform a rout move out of those hexes to an Axis controlled hex. Axis production is limited to a percentage of total production, since a large share is assumed to be used by the Eastern Front (21.3) and equipment exports will be reduced (21.1.12).

During non-campaign scenarios, the East Front Control option will not be available and historical progression of the East Front line will take place. Some Axis controlled cities may be captured and parts of the on or off map areas may become Soviet controlled during the time period of the scenario.

23.1.2. AXIS PLAYER CONTROL OF GERMAN FORCES (EF CONTROL ON)

When the East Front control option is enabled, the Axis player has control over German ground and air forces that are fighting on other fronts (referred to as the Eastern Front for simplicity). The progress of the Soviet Union, which is automatic when not using the EF control option, is now based on the forces assigned to the Eastern Front, referred to herein as the East Front (EF) box. These forces will suffer losses and receive supply and replacements in much the same manner as units do on the map. Because of this, all Axis production is available to the player (21.3). If the Soviet Union captures Berlin, the scenario will end. If the Eastern Front Control Option is enabled, there will be no automatic German withdrawals reflected in the Reinforcement and Withdrawal screen. If the progress of the Soviet Union advance exceeds what would have been the historical (automatic) advance, then the Western Allied player will receive victory points to reflect the difference (25.1.1).

For games with the East Front Control enabled, any help level (3.3.3) impact on the East Front box only occurs if the AI is playing one of the sides (does not impact human vs human games).

V1.00.00 – 21 November 2014

When the EF control option is turned on, 50,000 vehicles are added to the German damaged vehicle pool.

V1.00.13 – 26 January 2015

Minimum West Front replacements – When using the East Front Control Option, at the start of each German logistics phase, 20% of the manpower in the active pool at that moment is reserved to be used by Western Front units only (i.e. this manpower cannot be used for replacements for units on the Eastern Front).

23.2. THE EAST FRONT BOX

Axis East Front Forces are managed by the Axis player through the East Front box, which can be accessed by only the Axis player in both the air planning and move (action) phase by selecting the East Front mode button (hotkey ctrl-e) (5.1.4). In this screen, known as the East Front box the Axis player will be able to view information on all the German units on the Eastern Front as well as the status of the Front in regards to required number of Divisional sized combat units and HQ units as well as the potential for Soviet advances (26.3.38). If the number of divisions on the Eastern Front has been reduced to less than half the Divisions required, the Axis player may not send units to the Western Front, disband depleted units in the East Front box, or place a ground unit in the East Front box in refit mode. Once the number of divisions is equal to or greater than half of the required number, then the Axis player may once again make these changes.

V1.01.12 – 6 November 2015

East Front Option changes:

- a. Reduced the chance for losses in aircraft on the Eastern front in air units under 10 aircraft.
- b. Units on the East Front will be displayed on the East Front screen in yellow if their TOE is below 70%. They will still be displayed in red if they are unready.
- c. Army Group HQs may not be removed from the Eastern Front. Army and Corps HQs cannot be removed from the Eastern Front if that size HQ is currently under the Eastern Front requirement.

V1.01.31 – 9 April 2016

Rule clarification - Units in the East Front box require less vehicles to carry supplies/fuel/ammo. Rebuilding units in the editor with a delay of 2000 (units starting in the EF box) will reflect this and will have a lower vehicle need.

V1.01.37 – 25 May 2016

East Front Option - We are now dealing with German air groups when using the East Front option the same way we deal with ground units. Added code to remove the duplicate air groups at game start when the EF option is selected, and disabled withdrawals (leaving withdrawal choices to the players as it is for ground units). This should remove some duplicate German air units in games using the EF option.

East Front Option - Made tweaks to East Front combat, offsetting the impact of other changes, to improve East Front balance.

23.2.1. UNITS IN THE EF BOX

Each ground unit has its east front CV listed (motorized units are worth double CV in the EF box), as well as its morale (Mo) and number of men, guns and AFVs. Air Group Units information includes East Front CV, morale, aircraft model, and number of ready, damaged, and reserve aircraft. Colored text for the names of units in the East Front box will signify special status, with purple for refitting units (similar to the boxes around refitting units on the map), orange for unready units, and red for depleted units. Selecting the [W] next to a unit will send the unit to the Western Front at an admin point (AP) cost. The unit will be immediately removed from the EF box and will arrive as a reinforcement on the map area one turn later (19.1.1). Air group units transferred to the West Front will in the air national reserve one turn later (8.5). Note that Air group units assigned to airbase units that are captured due to the movement of the EF front line will be automatically transferred to the air national reserve. For ground units other than HQ units, [F] indicates the unit is in the front line and that its CV will be counted for combat purposes. Selecting [F] will toggle to [R], which takes the ground unit off the front line and places it in refit mode (20.6.7). Units in refit mode will not be counted into the combat totals on the Eastern Front. If a unit is unready or depleted it will be marked with a (u) and if it is depleted, it may be disbanded by pressing the [X] that will display next to the unit. There is no AP cost to disband a depleted unit in the East Front box.

23.2.2. EF BOX UNIT TRANSFER

To move a ground unit to the East Front box, the unit must be first moved to Königsberg, Warsaw, Krakow, Budapest or Bucharest. These cities have depots used by the units in the East Front box and when the East Front Control option is enabled they have their railyard levels increased to account for the extra freight transport requirement. Alternatively units may be moved to any depot hex that is east of hex column 160 or within 50 hexes of the East Front front line (by x coordinate), while also being north of hex row 200. Only German units can be sent to the Eastern Front box. Once in an appropriate hex, a button will appear on the unit in the unit bar to the right of the remaining Strategic Movement points. Selecting this "Send East" button will expend 1

AP and the unit will immediately be moved to the East Front box and be counted in the East Front CV totals.

Air units may be transferred to the East Front using the air transfer mode (F10). Select the air group units to be transferred in the normal manner (5.3.12) and then right click on any neutral Soviet Union controlled hex (instead of on an airbase). Air units in the EF box are set to auto upgrade at the start of each Axis logistics phase (8.1.8).

To move a unit from the East Front Box to the West Front the player selects the [W] in the EF box (23.2.1) and expends AP per the following (12.2.1):

Division (motorized) – 3 AP

Corp HQ – 3 AP

Division (non-motorized) – 2 AP

Army Group/Army HQ – 2 AP

Brigade Regiment (motorized) – 2 AP

Brigade Regiment (non-motorized) – 1 AP

Support unit – 1 AP

Air group unit – 1 AP

NOTE

if a HQ unit is moved from the East Front Box to the West Front, its leader will be automatically dismissed and a new leader appointed (11.4.3). The old leader will be available for reassignment.

V1.01.12 – 6 November 2015

Static units may no longer be sent to the East Front.

23.2.3. EF BOX SUPPLY

The EF box uses freight and vehicles from depots in the Eastern Europe map area (23.2.2). It doesn't use the normal hex tracing routine when determining vehicle usage, but there is some vehicle usage required to deliver the freight to the units in the EF box. When the EF control option is enabled, the German player is given 75k additional vehicles at the start of the campaign scenario.

Units in the East Front box have their supply priority determined based on the situation in the EF box as follows:

Front is Stable – Units will be priority 2, 3, 4 or 4+, which is 4 with a bonus that they check for replenishment before West Front priority 4 units check. Priority will be determined randomly.

Front is Fluid – Units will be priority 4 or 4+, determined randomly.

Front is Critical – Units will be priority 4+.

Units in refit status in the EF box will be considered to be located in the same hex as Berlin (a national supply source) 50 percent of the time, which will improve their ability to receive replacements and supply (20.6.7).

23.2.4. EAST FRONT BOX TRANSFERS AND UNIT MORALE

Whenever a unit is transferred to the Eastern Front box, there is a chance of a morale gain by units on the Eastern Front, with the higher the EF box CV value of the unit, the better chance of morale gains. However, whenever a unit is transferred from the Eastern Front box to the Western Front, there is a chance of a morale loss, with the higher the EF CV the better chance of morale losses. So, when transferring units west it is recommended to pull weakened units out of the east and send them west for refit (20.6.7). When transferring units east, it is recommended to refit them in the west first before they head to the EF box, as this will maximize the chance of a gain in East Front morale.

V1.00.29 – 19 March 2015

East Front Transfers - Air groups will now cause morale changes per rule 23.2.4. Previously only ground units did this. The more a/c in the group the greater the likelihood of morale changes. Increased the morale gain/loss due to the movement of ground forces to/from the East Front. Also, the movement of motorized units now has a somewhat higher impact on morale than non-motorized units.

23.3. EASTERN FRONT COMBAT AND SOVIET ADVANCE

During the Axis logistics phase, combat on the Eastern Front is resolved. The extent of the fighting is based on the Soviet Potential and the time of year. This impacts the current situation on the Eastern Front, which is dependent on the size of the German forces and their overall combat value. The result of combat will determine how far the Soviet/Axis front line will advance to the west as well as the number of casualties the German units will suffer. The East Front front line is not a straight vertical line of control on the map, but reflects a more realistic movement of the front. Progress is still indicated by an x coordinate, but this will not translate directly into control of those exact hexes on the map.

V1.00.00 – 21 November 2014

The ratio of German fighters (F, FB, NF) to other German aircraft on the East Front will have an impact on aircraft losses. The lower the number of fighters to other a/c, the higher the a/c losses that can be expected.

23.3.1. COMBAT VALUE ON THE EASTERN FRONT

Several factors go into calculating the total combat value (CV) on the Eastern Front. The CVs of all ground units, to include combat and support units, are first added together, with motorized units counting double their normal CV. This CV total is then modified based on whether the player is meeting the requirements for the number of divisions on the Eastern Front and for the number of each of the different HQ types required (26.3.38). The number of Army Group HQs, Army HQs, and Corps HQs located in the EF box are compared to the number of each type of HQ unit required. For each type of HQ unit, having more than the required HQs will provide a small bonus multiplier to the CV values of all the ground units in the EF box. Having insufficient HQ units will result in a penalty modifier to be applied to the ground unit CV values. The same is true for the number of Divisions required versus the number of front line Divisions (not in refit) in the EF box. For example, a player with more Corps HQ units than required, but fewer Army HQs and Divisions than required would have a positive CV modifier for the Corps HQs and negative modifiers for the Army HQs and Divisions. In each case, the greater the surplus or shortfall of the required units, the greater the modifier. The number of divisions required declines as the Front line moves west. Divisions in refit mode do not count toward the divisions required, nor do they add their CV to the total combat value. Only actual division sized combat units are counted in the Division requirement. Non-divisional units, to include support units, brigades, and regiments do not count toward meeting the Division requirement, though their CV is added to the total and will be negatively or positively modified as above. Air group unit CV is based on the type and number of ready aircraft and, with the exception of transports, is modified by the experience and morale of the air group unit. Transport air group unit CV is equal to .1 CV per transport aircraft in the group. The air group unit CV's are added to the Total Land Value to arrive at the Total Combat Value in the EF box. The CV value of the Axis forces in the EF box is multiplied by the Axis Morale Help Level/100 (3.3.3). This is done at the individual unit level for all units in the EF box.

23.3.2. SOVIET POTENTIAL

Each turn points will be added to the Soviet Potential, which indicates the ability of Soviet forces to conduct offensive action. The amount added each turn increases over time. Each turn a portion of the Soviet Potential will be expended causing attacks on German units and additional potential will be expended if the front line moves west, which simulates the Soviets building up for an offensive and then advancing so far that operations must slow down for supplies to catch up. The amount of potential that is used each turn to initiate combat is dependent on the time of year and a random factor. The impact of the time of year on combat intensity is listed below from highest intensity to lowest:

Category 1: June 16-Sept 30

Category 2: March and November

Category 3: January, February and December

Category 4: April 1 – June 15 and October

Due to improved road systems and milder weather conditions, once the Soviet front line advances out of the Soviet Union into Eastern Europe the combat intensity level will never be worse than category 2. This occurs once the x coordinate of the east front line is less than 171.

V1.00.13 – 26 January 2015

Editor – Added the ability to set the starting Soviet Potential using a function on the main tab titled Init Soviet Potential. The number in parenthesis next to this function is the current value.

23.3.3. SOVIET FRONT CONDITION AND ADVANCE

There are three possible Front Conditions; stable, fluid and critical. For each front condition, there is a minimum amount of total combat value that needs to be present in the EF box. If the amount of Total Combat Value of German units on the Eastern Front is enough for the front to be considered Stable, the front line will move no more than one hex column per turn. If the front is Fluid, a multi-hex advance is possible and greater German casualties will occur. When the situation is Critical, the chance of a large advance is greatly increased, as are German losses. The Total CV levels required for the front to be Stable, Fluid or Critical are displayed on the EF screen and are based on the time of year (lower intensity periods due to bad weather require lower CV values to remain Stable or Fluid) and the number of divisions required (the larger the number, the greater the required CV to be Stable). Each turn there is a random factor used when checking to see if the front is Stable, Fluid or Critical. Just before EF combat is resolved the EF German CV total is randomized:

Total CV=total+Random(total/2)-Random(total/2);

The revised total is compared to the Stable/Fluid/Critical limits to determine EF combat results. Note that having just over the amount needed for the front to remain Stable does not guarantee that on any given turn the front will be considered Stable.

24. SCENARIOS

There are two types of scenarios included in the game. Campaign scenarios cover the entire Western Front from a specific start date, use the full map area and use the campaign victory conditions hexes (25.1). Non-campaign scenarios are normally shorter length, do not necessarily use the full map area and have specific victory conditions (25.2). For production purposes, off map factories are considered on the supply grid. The impact of Soviet offensives on the Eastern Front will be represented in all campaign scenarios and in some non-campaign scenarios. The Axis player also has the option of enabling East Front Control in campaign games, which allows the player to influence the pace of the Soviet advance (23).

V1.01.01 – 30 September 2015

New Feature/Editor - Player Triggered Early End - Any short scenario can have one side designated in the editor so that if that side captures all of the objectives of both sides, the scenario will immediately end. Points will be awarded as if the player held the objectives for all of the rest of the turns of the scenario and will score end game objective points as well. In addition, all units deemed isolated on the side that does not hold an objective will be destroyed and counted in the victory point casualty count. Note that the Victory screen states at the bottom that the game may end early if it is a scenario set up for this. Scenarios that have the possibility of an early end have this noted in their scenario description text on the Load Scenario screen.

24.1. SCENARIO LIST

SCENARIO NAME	NUMBER OF TURNS	CAMPAIGN?	MAP AREA
1943-45 Campaign	109	Yes	Full
1944-45 Campaign (May Start)	64	Yes	Full
1944-45 Campaign (D-Day)	62	Yes	Full
Salerno to Rome 43-44	42	No	Partial
Battleground Italy 43-45	95	No	Partial
Breakout and Pursuit 44	11	No	Partial
Westwall	12	No	Partial
Bulge to the Rhine	12	No	Partial
Introductory Scenario - Air Campaign	4	No	Full
Introductory Scenario - Operation Husky	7	No	Partial

24.2. STARTING MOVEMENT ALLOWANCES AND UNIT WIN/LOSS NUMBERS

In all scenarios, the first player's units MPs are pre-determined and may be less than the maximum. The number of wins/losses for units at the start of a scenario will always be zero.

25. VICTORY CONDITIONS

There are three systems for determining victory in Gary Grigsby's War in the West, one for campaign scenarios, one for the introductory scenario – Air Campaign, and a third for all other scenarios, which usually cover a short time period and a smaller area than the entire map (24.1). Current Victory point (VP) totals for both campaign and non-campaign scenarios are displayed in the General Information and City/Airfield Box (5.1.5).

25.1.CAMPAIGN SCENARIO VICTORY CONDITIONS

Campaign scenarios start at different points during the war, but all can go to the first turn in August 1945 if the East Front Option is enabled (23). During each Allied Logistics Phase, the Allied player receives victory points (VPs) for controlling cities, for damage to Axis industry/manpower and for partisan activity or lack of it due to the Axis player's garrisons. The Allied player may lose VPs for undamaged U-Boat factories, for undamaged V-Weapon launchers/V-Weapon factories, for Allied casualties, for not meeting certain beachhead goals, and for weak partisan activity due to over-strength Axis garrisons. Victory will be decided based on the net Allied points scored during the campaign.

V1.00.29 – 19 March 2015

Added ability in the editor to set up the victory levels for campaign, air battle and the new air campaigns. Designers should note that: 1) Each number once entered should be lower than one on the right and higher to the one on the left 2) The major allied VP level should be positive otherwise it will reset it to defaults.

25.1.1. VICTORY POINT TYPES AND VALUES

Allied City VP Points: During each Western Allies Logistics Phase the Allied player will receive VPs for controlling cities and urban hexes (not towns) in Germany, Italy, Denmark, Netherlands, Belgium and France. The VPs received will be equal to the total City Control Points (CCP) divided by a date adjuster.

CITY CONTROL POINTS		
City Type	Control Points	Remarks
City	1	
Light Urban	3	
Heavy Urban	5	
Permanent Port/Mulberry	+1	In same hex as above
Major Capitol	+25	Berlin, Paris and Rome
Other Capitol	+5	

CCP Date adjustment divisor is as follows:

1943: 4

Jan-Jun 1944: 6

Jul-Dec 1944: 8

1945: 12

Allied Strategic Bombing Points

Strategic bombing points (SBPs) are calculated based on damage to German strategic industries and manpower factories. During each Western Allies Logistics Phase the Allied player will receive Strategic VPs equal to the total current SBPs divided by a date adjuster. SBPs are equal to the size of the factory type (number factory points) times damage percentage divided by 1000. The following types of factories are considered to be strategic:

German Nationality Manpower

German Nationality Heavy Industry

All Axis Controlled Oil

All Axis Controlled Fuel

All Axis Controlled Synthetic Fuel

If the Allied player captures cities in Germany (or for oil/fuel/synthetic fuel, cities in areas controlled by the Axis player at start), then SBPs will be scored as if the eligible factories in that city were at 100 percent damage. If the city is captured by the Soviets, no points will be scored for the factories.

SBP Date adjustment divisor is as follows:

1943: 6
Jan-Jun 1944: 9
Jul-Dec 1944: 12
1945: 18

Allied Partisan/Garrison Victory Points

During each Western Allies Logistics phase the Allied player will receive Partisan VPs from each Axis garrison area equal to the current partisan activity in the area minus ten. Note that if the partisan activity level goes below 10, for every point below 10 (down to - 10) there is a 1/20 chance of scoring a negative VP (18.2).

Western Allies Casualty Negative VP

The Allied player loses VPs for men killed or wounded as follows:

US killed/captured/disabled: - 1 VP per 1000

Other (non-US) killed/captured/disabled: - 1 VP per 667

No Beachhead Negative VP

On February 1, 1944 if the Allies do not control at least 10 hexes in mainland France, Northern Europe or Italy, the Allies lose 400 victory points. On July 1, 1944, if the Allies do not control at least 10 hexes in mainland France or Northern Europe the Allies lose 1000 victory points. Northern Europe is defined as the continent north of hex row 215.

East Front Advance Axis Penalty VP (only when using the East Front Control Game Option)

If East Front control option is enabled (23.1.2) the Western Allies score victory points if the Eastern Front line is advancing ahead of schedule, gaining ten VP per hex. Points are scored during the first Allied turn of every month based on comparing the current x coordinate of the Soviet/Axis front line versus the historical x coordinates, adding VPs equal to 10 times (historical x - current x), but only if this is a positive number (i.e. if east front is moving faster west than historical). On the East Front screen, the historical x coordinate is shown in parentheses after the front line number (26.3.38).

U-Boat Factory Negative VP

During 1943 only, the damage percentage of U-Boat factories may result in the Western Allies scoring negative victory points during the Logistics Phase of the Allied turn equal to U-Boat point divided by 10. U-Boat points (UPs) are calculated by summing up the size (number of factory points) of all undamaged (less than one percent damage) U-Boat factories.

V-Weapon Site and Factory Negative VP

During the years 1944 and 1945 only, the Allied player will lose VPs each turn equal to the V-Weapon Points (VWP) total divided by 10. Once the Invasion of Northern Europe has occurred (defined as there being an Allied controlled hex in German Occupied Europe north of row 215), the Allies will lose VPs each turn equal to the VWP total divided by 5. V-Weapon points (VWPs) are calculated by having each undamaged V-weapon site and undamaged v-weapon factory add a number to the VWPs equal to Rnd(factory size. For example, an undamaged V-weapon site with a value of 3 will add 0, 1 or 2 to the VWP total for the turn.

NOTE

WA Italian casualties are not counted towards negative VP in the campaign games.

STRATEGY NOTE

Since, when a German city is captured, all strategic factories in the city are set to 100 percent damage and they are not repaired, points will be scored in campaign games as if the factories were bombed. Capturing German cities not only scores city victory points but also bombing victory points, so it behaves the Allies to get to Germany as quickly as possible.

V1.00.07 – 19 December 2014

Rule change – Victory Conditions – The SBP (Strategic Bombing Points) Date adjustment divisors have been changed to the following: 1943: 2, Jan-Jun 1944: 6, Jul-Dec 1944: 9, 1945: 12 in order to increase Allied bombing points scored. These are intended to offset the changes made below that would otherwise lower Allied bombing points.

V1.00.11 – 14 January 2015

Victory Points – The City Control Point (CCP) Date adjustment divisor was incorrectly stated in the manual to be 4,6,8, and 12. In 1.00.00 it was actually 6,9,12, and 18. In version 1.00.08 it was accidentally changed to 2,6,9 and 12, but in this version it has been corrected back to the intended release values of 6,9,12, and 18.

V1.01.01 – 30 September 2015

The East Front Advance Axis Penalty VPs are now ½ of what they were. The front line differential is now multiplied by 5 instead of 10 to determine the number of victory points scored.

Air Battle Victory Conditions – Victory points scored for aircraft losses in Air Battle scenarios are now divided by 10. We found this was needed after the Victory modifiers were added in the 1.00.29 version.

25.1.2. GAME END CONDITIONS

When not using the East Front control option (23.1.1), campaign scenarios will end either immediately when Berlin is captured by the Allies, or at the beginning of the first turn in May 1945 (Berlin is assumed to have been captured by the Soviets by that time). When using the East Front control option (23.1.2), campaign scenarios will end during the Allied turn when Berlin is captured, at the beginning of the turn that Berlin has fallen to the Soviets, or at the beginning of the first turn in August 1945. Whether using the East Front control option or not, the progress of the Eastern Front can be viewed by toggling on the view enemy hexes map information tab button (hotkey e), which will darken hexes that are considered Soviet controlled.

If Berlin is captured by the Western Allies mid-turn in a campaign scenario, the game will immediately go to the end game screen. The options then will be to view the victory screen, view the map area, or save and exit. Early end bonus and late end penalty points will be based on the date at the time the game ends (see below). Since this will be in the Western Allied phase of the turn, it will be one turn earlier than if the game ends in the Axis logistics phase of the next turn.

If a campaign scenario goes past April 1945, the Western Allies will incur a VP penalty. Starting with the first turn in May 1945, for each additional turn the game lasts, the Allied player will lose 100 victory points. This penalty will be indicated on the victory screen and the total VP score will include this penalty factored into it. For example, 3 turns into May the Allied total would be reduced by 300 victory points. If the game ends prior to May 1945, then the current city control and factory damage situation is considered frozen and the Allies will score early end City Control and Strategic Bombing points for each turn up until the first turn of May 1945 (25.1.1). In addition, the Allies will score 75 points per turn for each turn the game ends early. For example, if a campaign ends four turns early and the Allies score 30 points per turn for city control and strategic bombing, they will receive a total of 420 bonus victory points, or $(4 \times 30) + (4 \times 75)$. If playing either a campaign scenario or the Air Campaign introductory scenario, when the scenario ends, there will be an immediate scoring round conducted prior to going to the Victory Screen as if the game was going through the Allied Logistics Phase Scoring phase. This is the only time that scoring takes place outside of the Allied logistics phase.

Victory levels for the campaign scenarios are listed in the campaign victory point screen (26.3.5.1).

25.2. NON-CAMPAIGN SCENARIO VICTORY CONDITIONS

Victory conditions for most non-campaign scenarios are based on control of victory locations, usually specific town, city or urban hexes for each side, and cumulative losses in men, guns, AFVs and aircraft. Victory points for control of victory locations are awarded each player-turn (twice per complete turn) and there is also a separate victory point award for controlling victory locations at the end of the scenario. Victory locations can be applicable to both sides or be specific to one side only. Victory point locations can be displayed by selecting the Toggle Victory Locations button in the map information menu tab (5.1.2.1). Red flags are Western Allies VP locations, black flags are Axis VP locations, and black and red flags are VP locations for both sides. Losses are based on the number of men, guns, AFV or aircraft that must be destroyed for the opposing side to gain one victory point. This base number for losses can be further modified for each side by a certain percentage. For example, the scenario may be set up so that each player will “earn” 1 VP for each 1000 men lost by the other player, but if the Western Allies player has a twenty percent modifier, the Axis will not gain a victory point until 5000 men have been lost. Victory levels for non-campaign scenarios are based on the ratio of the side with the most points to the side with the least points. This ratio is shown on the screen along with either an Axis or Western Allies VP Advantage and the number (to one decimal place) or “No significant VP advantage” if the ratio is under 1.1.

Victory levels are as follows:

Decisive Victory – ratio greater than or equal to 5.0

Major Victory – ratio less than 5.0 but greater than or equal to 2.0

Minor Victory – ratio less than 2.0 but greater than or equal to 1.1

Draw – ratio less than 1.1

NOTE

Each side will start a non-campaign scenario with a minimum VP point score of one.

25.2.1. INTRODUCTORY SCENARIO – AIR CAMPAIGN SCENARIO VICTORY CONDITIONS

The victory conditions for the air campaign introductory scenario are determined by strategic bombing victory points and Western Allies casualties (25.1.1). Each Allied logistics phase and upon the conclusion of the scenario, the Allied player scores Strategic Victory Points equal to those scored in the campaign times 100, and negative Casualty VPs equal to one VP per US and

Other Allied aircraft lost. Victory levels for the air campaign introductory scenario are listed in the air campaign introductory scenario victory point screen (26.3.5.3).

26. APPENDICES

26.1. APPENDIX A: UNIT DESIGNATIONS AND COMBAT VALUE

Below are listed the size, type and associated unit counter symbols, national and elite unit colors, and ground element type and combat values that can be found in the game.

V1.01.37 – 25 May 2016

Display Change - Adjusted unit names on counters. Removed suffixes - st,nd,rd.

26.1.1. UNIT SIZES

II = Battalion

III = Regiment

X = Brigade

XX = Division

XXX = Corps

XXXX = Army

XXXXX = Army Group, High Command

26.1.2. UNIT TYPES AND SYMBOLS

SYMBOL	UNIT TYPE	SYMBOL	UNIT TYPE
	Armor		Infantry
	Mechanized		Mountain Infantry
	Motorized Infantry		Parachute (Airborne)
	Self-Propelled Artillery		Air Landing
	Artillery, Mortar, Rocket		Cavalry
	Anti-Aircraft		Security
	Anti-Tank		Engineer
	Headquarters		Air Headquarters
	Amphibious Headquarters		
	Aviation (Air Base Unit)		Machinegun
	Construction/Labor		Fortified Zone

26.1.3. UNIT COLORS

	Olive = United States Unit
	Tan = British Unit
	Dark Blue = Free French Unit
	Tan/Red = CW Canadian Unit
	Brown = Western Allies Polish Unit
	Pale Blue/Olive = Western Allies Brazilian Unit
	Tan/Black = CW New Zealand Unit
	Tan/White = CW Indian Unit
	Dark Yellow/Olive = Western Allies Italian Unit
	Pale Grey = Western Allies Czech Unit
	Blue = Western Allies Belgian Unit
	Turquoise = Western Allies Greek Unit
	Dark Brown = Western Allies Netherlands Unit
	Tan/Brown = CW South African Unit
	Grey = German Army Unit
	Light Blue/Grey = German Air Force Unit
	Black = Elite German SS Unit
	Black/Grey = Non-Elite German SS Unit
	Dark Yellow = Italian Unit
	Green = Hungarian Unit
	Pale Blue = Rumanian Unit

26.1.4.

26.1.5. GROUND ELEMENT TYPE AND COMBAT VALUES

All ground element types (except naval guns) have a minimum of 1 CV. Individual ground element Combat Value weighting factors:

GROUND ELEMENT TYPE	CV WEIGHT FACTOR	AFV TYPE
Self-Propelled Artillery	3	Yes
Self-Propelled Infantry Gun	5	Yes
Half Track Close Support Howitzer	5	Yes
Light Tank Destroyer	5	Yes
Tank Destroyer	5	Yes
Heavy Tank Destroyer	5	Yes
Assault Gun	5	Yes
Heavy Assault Gun	6	Yes
Light Tank	7	Yes
Medium Tank	9	Yes
Heavy Tank	9	Yes
Close Support Tank	9	Yes
Flame Tank	9	Yes
Cavalry Tank	9	Yes
Heavy Cavalry Tank	9	Yes
Infantry Tank	9	Yes
Duplex Drive (DD) Tank	9	Yes
MSW Tank	9	Yes
Engineering Tank	9	Yes
Armored Personnel Carrier	2	No
Self-Propelled Flak	3	No
Self-Propelled AAMG	3	No
Half Track AT Gun	3	No
Half Track MG/Mortar	3	No
Armored Car	4	No
Support Squad	1	No
Labor Squad	1	No
Machine Gun	1	No
Security Squad	2	No
Rifle Squad	3	No
SMG Squad	3	No
Ski Squad	3	No
Naval Squad	3	No
Cavalry Squad	3	No
Motorcycle Squad	3	No
Motorized Infantry Squad	3	No
Airborne Squad	3	No
Engineer Squad	3	No

Mechanized Engineering Squad	4	No
Mechanized Infantry Squad	4	No
Infantry-AT	1	No
Mortar	1	No
Light AT Gun	1	No
AT Gun	1	No
AA Machine Gun	1	No
Light Flak	1	No
Medium Flak	1	No
Heavy Flak	1	No
Artillery	1	No
Heavy Artillery	1	No
Naval Gun	0	No
Rocket	1	No
Infantry Gun	1	No
Heavy Infantry Gun	1	No

26.2. APPENDIX B: COMMANDER'S REPORT (CR)

The commander's report can be accessed from the info screens menu tab toolbar (5.1.2.2) or hotkey 'c' and is a multi-tabbed list of information on units, headquarters units, air group units and pilots, leaders, battles, equipment and battles that can be sorted and filtered in numerous ways. Various screens and windows have links to or are linked from the commander's report. In addition, some unit settings can be changed for both individual units and groups of units using this screen.

26.2.1. GENERAL CR INTERFACE MECHANICS

When initially selected (5.1.2.1), the Commander's Report (CR) default view will be the unit tab main view. Subsequent selection of the CR will bring up the screen with the last view selected by the player (i.e. the player won't have to start over every time they bring up the CR). The currently selected tab will be in white text. Currently selected items within the tab will be in red text, to include an active sorted column. Selectable items will be in blue text, with the exception of unit names in the units tab, which are color coded by type of unit, but are all selectable. Each column header has a pop-up text box with more detail on the purpose of the column. Selecting a column header will sort the column. When sorting by column headers, selecting the first time will sort in ascending order, selecting the second time will sort in descending order and selecting the third time will deselect the sort. For tabs with multiple views, a view annotated with an asterisk indicates an active sort. In some cases, selecting an item within a column will bring up a filtered list of just those types of units in red text. Selecting a red text item within the filtered column will clear the filter. Selecting <Clear All Filters> in the display filters section will not only clear any selected filters, but also any active sorting.

Some tabs have functions that allow the player to change unit modes or settings by bringing up a dialog box. Note that leaving the dialog box blank, selecting the check box, or using the 'Enter' key will result in a setting of zero. Changes can be made for individual units by selecting the current setting for that unit under the appropriate column header. In addition, by selecting the applicable item in the 'Functions' section, all currently listed units can be changed at one time. For example, a player could use the display filter to list all units that are in a depleted state and then place them all in refit mode.

There will be a few differences between the Western Allies and the Axis Commander's Report, mostly in the display filters. For example, the Axis display filters will not have an Amphib Prep filter option, since this is not applicable to the Axis in War in the West 1943-1945.

26.2.2. UNITS TAB

This is the busiest tab, capable of displaying all of the phasing player's ground units (headquarters, combat, and support) and consisting of three views (main and two supply detail views) as well as three functions and a large display filter section. Selecting a number in the 'units' column of the ground element section of the production screen (26.3.3) will bring up the units tab filtered to list just those units that have that particular ground element. Selecting the show subordinates link in the HQ unit detail window (26.3.17) will bring up the units tab filtered to list just those units attached to that HQ unit with red text just below the number of units selected stating "Units Subordinated to [HQ Unit]". Selecting this text will clear the subordinate list and bring the player back to the default unit tab view of all ground units.

26.2.2.1. UNITS TAB MAIN VIEW

Directly underneath the Units tab will list the number of units currently selected and then number of men, guns, AFV and aircraft assigned to the selected units. These numbers will change as units are filtered or sorted out of the view. The following information is provided by column headers, all of which can be selected to sort their columns:

Unit Name: Units names are color coded, with ground Headquarters units purple, combat units light blue, support units green, and air headquarters units, to include air base units, turquoise.

Selecting the name brings up a dialog box with three selections. Supply Details brings up that unit's supply detail window (26.3.27). Set OB Filter selects and lists just the units with that unit's current Table of Equipment (TOE(OB)) and lists the number of the OB from the Game Editor (7.2.2). Selecting Exit will close the dialog box.

Nat (Nationality): Lists the nationality of the unit. Selecting a nationality will set the 'Nation' filter and list just those units of that nationality.

Loc (Location): Lists the current hex location of the unit in X, Y coordinates. Support unit locations will be the same as the HQ or combat unit to which they are attached. Selecting the location will select the hex the unit is in and bring up the applicable unit detail window. For support units, closing their detail window will bring up the detail window of the unit to which they are attached.

Type: Unit type, which corresponds directly with the unit formation type unit display filters (26.2.4). HQ units are listed by specific type (i.e. Corps, Army, Army Group, High Command, etc.).

HHQ (Higher Headquarters Unit): Name of HQ unit to which the unit is directly attached. For Anti-aircraft support units attached to a town, city or urban hex, the naming convention is 'C:Name'. Selecting the name of the HQ unit or town, city or urban hex selects and lists just the units that are attached.

DtHQ (Distance to HQ in Hexes): Distance to HQ is the difference between the command range of the HQ unit to which the unit is attached and the distance in hexes from the HQ unit to the attached unit. For example, if a unit is attached to an Army HQ unit with a command range of 15 and is 11 hexes distance, DtHQ will be 4. A negative number indicates that the unit is beyond the command range of the HQ to which it is attached and thus not eligible for support squad ground element support (7.7.4).

Men, Guns, AFV in Unit: These 3 columns display the number of each item internal to that unit (attached units not counted).

AC (Aircraft in Airbases): The number of aircraft in air group units attached to the air base unit.

Mrl (Morale): The current morale of the unit.

Average Experience (Exp) and Fatigue (Fat): These 2 columns provide a calculation of the average of these factors for the unit. Note that this average is for the player's information only, as the game system only uses experience and fatigue by type of ground element.

CV (Combat Value): The current combat value of the unit as displayed on the unit counter.

%TOE (Unit Table of Equipment (TOE) Percentage): The percentage of the unit's TOE currently in the unit.

TOEM% (Maximum TOE Percentage Setting): The maximum percentage of a unit's TOE to which it can take replacements (20.6.4). Selecting the current percentage will bring up a dialog box allowing the player to set the TOEM% for that unit.

AmP (Amphibious Preparation): Current number of amphibious preparation points for that unit (16.6.3). This column is for the Western Allies CR only and will display in place of TOEM% if the Amphib Prep filter is toggled to 'Displayed'.

MP (Movement Points): Current MP allowance remaining for that unit.

TtOB (Number of Turns until next TOE(OB) Upgrade): The number will be 0 if the upgrade is commencing that turn. Selecting the number will bring up the TOE Upgrade window (5.4.24) for that unit.

Rf/Rs (Unit Mode/Status): Lists the current status of the unit, to include Ready, Reserve, Refit, Unready and Static. Selecting the current status allows combat units only to toggle between ready, reserve, and refit. Unready units can only toggle to refit. Static units cannot change status.

SPri (Supply Priority (HQ and Air Base units only): Lists the current supply priority for HQ units and air base units (20.4.2). Selecting the current number brings up a dialog box that allows the player to reset the supply priority for that unit between 0 and 4.

Elt (Elite Status): Lists Axis and Western Allies elite units and other special types of Axis units using the following abbreviations: AE= Western Allies Elite, E=Axis Elite, SSE=SS Elite, SS=Non-elite SS, LW=Luftwaffe units. Selecting one of the abbreviations will select and list just those units with that particular status.

Won and Lost: These columns list the number of wins and losses that the unit, or its attached units if a HQ unit, has accrued.

26.2.2.2. UNIT TAB SUPPLY VIEWS

There are two supply views that provide much of the same information found in the unit supply detail window (23.3.27). Each view has the unit name, nationality, location, type and HHQ columns found in the main view (26.2.2.1). The Current Status view has the same information as the current status section of the unit supply detail window while the Received view is only lacking the amount of freight converted to replacements and the No freight, No trucks, No fuel, No supply, No manpower section.

26.2.2.3. UNITS TAB FUNCTIONS

The main view of the units tab has a functions section with three selectable functions that allows the player to change the status of all eligible units that are currently listed as follows:

Refit/Reserve: Selecting brings up a dialog box that allows the player to change the status of combat units to Refit or Reserve (if eligible) status. Selecting '0' will return the units to Ready or Unready status. The status of Static units cannot be changed.

Max TOE%: Selecting brings up a dialog box that allows the player to change the maximum TOE percentage setting of all listed units.

For all but fortified zone units and air base units that can have maximum TOE below 50 percent, entering a number below 50 or above 100 will revert to 50 or 100 (20.6.4).

Supply Priority: Selecting brings up a dialog box that allows the player to change the supply priority of all listed HQ and air base units to a setting from 0 to 4. (20.4.2). Note that air base units set to zero priority will not be resupplied.

26.2.2.4. UNITS TAB DISPLAY FILTERS

The unit tab has two distinct types of unit display filters. The Unit Formation Type filters are on/off toggles that allow the player to determine the type of units to be listed. They can be toggled individually or globally using the 'ALL' or 'None' filters. The other display filters will not affect the unit formation type filters and most of them show a particular status, with a toggle between all units, units with that status and units without that status (non). For example, the default for the Isolated filter is all units and it can be further toggled between all isolated units and all non-isolated units. There are several exceptions. For example the size filter toggles between Army Group size HQ units down to Company size support units and the Nation filter toggles between all of each player's different nations. OnMap filters between on map, off map and multi-role units. The Western Allies Amphib Prep filter, when toggled to 'Displayed,' replaces ToeM with AmP 26.2.2.1). The Air Base filter allows the option to display all, those with air group units assigned (With AC), and those with no aircraft (Empty). As mentioned above, selecting 'Clear All Filters' will clear any filters as well as any active column header sorting.

26.2.3. HQS (HEADQUARTERS UNITS) TAB

This tab lists all the phasing player's headquarters units, to include type 6 rail repair units and type 7 amphibious units, but not type 5 air base units (7.7.1). It consists of only one view, but it does have a functions section.

V1.00.29 – 19 March 2015

Formation colors for HQs can now be set in the game and in the editor by going to the unit detail screen for the HQ in question. Unique colors can be set for any HQ, not just army HQs. When resetting these values to default, they will go back to the way they are hardcoded, which for some HQs is white.

26.2.3.1. HQS TAB VIEW

Directly underneath the HQs tab will show the total number of HQ units currently selected and then a break down by type of HQ unit, with the type corresponding to the designations in the 'Type' column and the HQ display filters. These numbers will change as units are filtered or sorted out of the view. The following information is provided by column headers, all of which can be selected to sort their columns:

Unit Name: Selecting the HQ unit name brings up the units tab (26.2.2) listing that HQ unit and all attached units.

Nat (Nationality): Lists the nationality of the unit. Selecting a nationality will set the 'Nation' filter and list just those units of that nationality.

Loc (Location): Lists the current hex location of the unit in X, Y coordinates. Selecting the location will select the hex the unit is in and bring up the applicable unit detail window.

Type: Unit type, which corresponds directly with the unit formation type unit display filters (26.2.3.3).

HHQ (Higher Headquarters Unit): Name of HQ unit to which the HQ unit is directly attached. Selecting the name of the HQ unit selects and lists just the HQ units that are attached.

Men, Guns, AFV, Aircraft in Unit: These four columns list the total number of each item in the HQ unit and all of its attached units. Selecting one of the numbers brings up the applicable Formation Inventory Window, which breaks down each item by number and type of ground element or aircraft (26.2.3.2).

Leader: Lists the leader in command of the HQ unit. Selecting the leader's name brings up the Leader Detail Window (26.3.22). Closing the detail window selects the HQ unit location and brings up the HQ unit detail window.

SupL (Support Level): Lists the current support unit level for that HQ unit (7.7.3.2). Selecting the current number or Lck (Locked) brings up a dialog box that allows the player to reset the support level for that HQ unit between - 1 and 9, with - 1 changing the setting to Locked.

CU (Combat Units) and SU (Support Units): These two columns display the number of each type of unit attached to the HQ unit. Note that Support Unit numbers do not include construction type units.

CP (Command Points): This number is the difference between the number of command points of combat units attached to the HQ unit and the HQ unit's Command Capacity (CC) (7.7.2). A negative number indicates that the number of command points of the units attached exceeds the HQ units CC.

Supply Priority: Selecting brings up a dialog box that allows the player to change the supply priority of all listed HQ units to a setting from 0 to 4 (20.4.2).

Frzn (Frozen): A non-zero number indicates that the HQ unit is frozen for that number of turns (10.1).

26.2.3.2. FORMATION INVENTORY WINDOW

These windows can be accessed by selecting the number of men, guns, AFV or aircraft in the applicable column of the HQs tab. Each formation inventory window provides the following information:

Name: Displays the name of the headquarters unit that has command and control of the listed forces.

Men, Guns, AFV, Aircraft: Displays an icon followed by the number for each of the four categories. The selected category (i.e. AFV) is in red text; the other three categories are in blue text and can be selected to change the formation inventory to that

category.

Type of Ground Element/Aircraft: This column lists either the ground element (men, guns, AFV) type or aircraft type with expand and collapse ([+]/[-]) capability by each type or for all at once. Expanding a type (e.g. medium tank or fighter) will display a list of the specific ground element (Panzer IVf2) or aircraft model (MC.202 Folgore) along with the applicable silhouette. Selecting a specific ground element will take the player back to the main units tab filtered to display just the units that are subordinated to the HQ unit that contain that ground element (26.2.2). Selecting a specific aircraft model will take the player to the Air Groups tab filtered to display just the air group units that contain that aircraft model. Expanding or collapsing the display will change the presentation in the other three columns.

NAT (Nationality): This column is blank until a ground element or aircraft type is expanded. Then for each specific ground element or aircraft model, their applicable nationality will be displayed.

READY: This column displays the total number of ready ground elements or ready and reserve aircraft of each type. If a type is expanded, a sub-total for each specific ground element or aircraft model will also be displayed.

DAMAGED: This column displays the total number of damaged ground elements or aircraft of each type. If a type is expanded, a sub-total for each specific ground element or aircraft model will also be displayed.

TOTAL: At the bottom of the window the total overall number, as well as the total number of ready (ready/reserve for aircraft) and the total number of damaged ground elements or aircraft will be displayed.

26.2.3.3. FUNCTIONS

The main view of the HQs tab has a functions section with two selectable functions that allows the player to change the status of all eligible units that are currently listed as follows:

Support Level: Selecting brings up a dialog box that allows the player to change the support level of all listed HQ units to a setting from - 1 to 9, with - 1 resulting in a Locked setting (7.7.3.2).

Supply Priority: Selecting brings up a dialog box that allows the player to change the supply priority of all listed HQ units to a setting from 0 to 4 (20.4.2).

26.2.3.4. HQ DISPLAY FILTERS

Most of the HQ display filters are type filters, with on/off toggles that allow the player to determine the type of HQ units to be listed. They can be toggled individually or globally using the 'All' or 'None' filters. All air headquarter units, regardless of actual type are filtered under 'AirCom.' The HQs tab display filter also has a 'Nation' filter that toggles between each player's different nations. Selecting 'Clear all Filters' will not only clear all current filters, but also any active column header sorting.

26.2.4. AIR GROUPS (AIR GROUP UNITS) TAB

This tab lists all the phasing players' air group units and has a separate view for pilots (8.2) as well as a functions section. Selecting a number in the units column of the air group unit section of the production screen (26.3.3 will bring up the air group units tab filtered to list just those air group units that have that particular aircraft model.

V1.00.07 – 19 December 2014

Interface addition - Added load out info when comparing aircraft in the CR screen.

V1.00.21 – 18 February 2015

Added new air group CR filters: pct exp/moral/fatigue.

V1.01.37– 25 May 2016

East Front Option - We are now dealing with German air groups when using the East Front option the same way we deal with ground units. Added code to remove the duplicate air groups at game start when the EF option is selected, and disabled withdrawals (leaving withdrawal choices to the players as it is for ground units). This should remove some duplicate German air units in games using the EF option.

26.2.4.1. AIR GROUPS TAB VIEW

Directly underneath the Air Groups tab will show the total number of aircraft in air group units currently selected and then a break down by the number of ready, reserve, and damaged aircraft. Also listed will be aircraft kills, which is the number of enemy aircraft destroyed in air to air combat. These numbers will change as units are filtered or sorted out of the view. The air group units are listed under and sorted by the Air HQ unit that they are attached. Selecting the name of the HQ unit selects and lists just the air group units that are attached. Selecting the [+]/[-] next to the Air HQ unit name will allow a player to collapse to hide or expand to display the air HQ unit's attached air group units. The following information is provided by column headers, all of which can be selected to sort their columns:

Name: Air group unit name (8.1.6). Selecting the name will bring up that air group unit's detail window (26.3.19). There are several color codes for air group names. Air group units that are currently eligible and will fly Naval Patrol missions unless player action is taken will be colored turquoise (17.3.5). Air group units with their mission set to rest will be colored pink, while those with their mission set to training will be colored yellow (8.1.2).

Nat (Nationality): Air group unit nationality. Selecting a nationality will set the 'Nation' filter and list just those units of that

nationality.

Size: The air group unit group type (e.g. Squad for Squadron), which prescribes its maximum size (8.1.4). Selecting a particular group type within this column will bring up a filtered list of just the air group units of that same size.

Aircraft: Specific model of aircraft assigned to that air group unit (e.g. FW-190F). Selecting a particular aircraft model within this column will bring up a filtered list of just the air group units with that aircraft model.

Type: Lists functional type of aircraft in air group unit (8.1.5). The fighter bomber type abbreviation also doubles to display their mission setting for either bomber (FB) or fighter (FB-F). If their mission setting is different than their training, then an asterisk will display next to their abbreviation, with FB-F* designating trained as bomber and FB* trained as a fighter. The fighter bomber type abbreviation can be selected to change the mission setting for that air group unit. For example, FB can be changed to FB-F* and FB-F can be changed to FB* (17.1.8).

Loc (Location): Lists the current hex location of the air base unit that the air group unit is attached in X, Y coordinates, with the exception of units attached to the national reserve (8.5), which will have their location annotated as 'RESERVE'. With the exception of units in the national reserve (no link), selecting the location will select the hex the air base unit is in.

Air Base: Lists the air base unit, with its size in parentheses, to which the air group unit is attached. If the air base unit is attached to a different air HQ unit than the air group unit, then the air base unit name will have an asterick. Selecting a particular air base unit within this column will bring up a filtered list of just the air group units attached to that air base unit. This column will be annotated with '-' for units in the national reserve.

AD (Air Directive): If the air group unit has been manually assigned to an air directive issued to its HQ unit, the type of air directive will be listed.

MIS (Mission Setting): Lists the current mission setting for the air group unit (8.1.2). Selecting the current setting will allow the player to toggle through and change the mission setting as desired. Per above, changing the mission setting to rest or training will change the color of the mission setting and the air group unit name.

Upg (Swap): Displays whether the air group unit has automatic (A) or manual (M) aircraft change out (swap) enabled (8.1.8). Selecting the current setting within the column will toggle it to the other setting. When manual aircraft change out is enabled, a '>>' link will allow the player to access the manual aircraft upgrade window (26.3.19).

Rpl (Replacements): Settings for aircraft and pilot replacements. Toggles between Trained Pilots (TPI) (first chance at getting replacement planes and pilots and will only take trained pilots from the pilot pool), Priority (PRI) (next chance at getting planes/pilots, will accept untrained pilots), Normal (NOR) (last groups to get replacements, will accept untrained pilots), and Restricted (RES) (no replacements). The default is Normal.

Exp, Mrl, Fat: These three columns list the current experience, morale or fatigue for that air group unit.

Rdy, Res, Dmg: These three columns list the current number of ready, reserve or damaged aircraft assigned to the air group unit.

Max (Maximum): Lists the maximum number of ready and damaged aircraft prescribed for that air group unit, which is based on group type (size). Reserve aircraft are not counted against the maximum number of aircraft in the unit (8.1.1).

PLT (Pilot): Lists the number of ready pilots in the air group unit. If the number of pilots is less than the maximum number of aircraft it will be marked with an asterick and color coded yellow and if the number of pilots is less than the number of ready aircraft, it will be marked with two astericks and color coded red.

Kill: Displays the number of enemy aircraft destroyed in air to air combat by that air group unit.

Trvl (Travel): Displays the percentage of that air group unit's "miles flown" allowance that has been expended (17.1.1).

V1.00.11 – 14 January 2015

CR screen - Added the number of pilots/crews to the Air Group tab of the CR screen (near the top of the screen in the list of ready/damaged/reserved aircraft, etc.).

26.2.4.2. AIR GROUPS TAB PILOTS VIEW

The top of the view has a 'SHOW LIST' link to a window that displays information for each of the phasing player's individual pilots, to include identification number, nationality, air group unit assigned (filterable), status (Ready, Wounded, Captured), missions flown, experience, fatigue, and air kills.

The main pilots view displays the following information for each nation that has pilots:

TOTAL: Total number of pilots for that nation.

READY: The number of ready pilots in air group units.

WOUNDED, CAPTURED, KIA: Number in each category.

FREE: The number of trained pilots that are already available, but not assigned to an air group unit. Units that need pilots will take from free pilots first.

POOL: The number of new trained pilots available. The second number after the + sign indicates how many new trained pilots will be arriving into the pool each turn. Units that need pilots will take from pool pilots after taking all the free pilots.

MISSING (TO MAX): The first number is the amount of pilots which are missing to fill all ready planes. The second number in parentheses is the number of pilots short (negative number) or over (positive) to fill all air group units to maximum size.

26.2.4.3. FUNCTIONS

The main view of the Air Groups tab has a functions section with four selectable functions that allows the player to change the status of all eligible units that are currently selected as follows:

Mission Setting: Selecting brings up a dialog box that allows the player to change what time of day the air group units can fly (17.1.6) or to assign it to a training or rest mission (17.1.7). Entering a '0' will assign Day&Night, '1' Night Only, '2' Day Only, '3' Train, and '4' Rest.

Change Upgr: Selecting brings up a dialog box that allows the player to change whether the selected air group units will upgrade (swap) aircraft manually (0) or automatically (1) (8.1.8).

Replace: Selecting brings up a dialog box that allows the player to set the aircraft and pilot replacement priority (20.6.2). Settings are Normal (0), Restricted (no replacements) (1), Priority (2), and Trained Pilots (only) (3).

Disband: Selecting brings up a confirmation box that allows the player to disband the selected air group units if eligible (10.3).

Add Pilots: Selecting brings up a series of confirmation box that allows the player to add trained or new pilots to the selected air group units up to the maximum number of aircraft in each air group unit (8.2).

26.2.4.4. AIR GROUP DISPLAY FILTERS

The Air Groups tab has multiple types of unit display filters. The Aircraft Type filters are on/off toggles that allow the player to determine the functional type (8.1.5) of air group units to be listed. They can be toggled individually or globally using the 'ALL' or 'None' filters. There are nine other display filters that will not affect the air group functional type filters. The 'Nation' filter toggles between all the different nations that have air group units for that player. There are two 'Percent' filters that allow the player to set a percentage range between 0 and 100+. The default setting for these filters is 'All.' Selecting one of these filters will bring up a 'from' dialog box to set the beginning boundary percentage. Selecting the check box will then bring up a 'to' dialog box to set the ending boundary percentage. The current range selected will then be displayed under that filter. To return just that filter to the default, select the range and then enter '-1' into the 'from' dialog box. The two 'Percent' filters are the 'Percent Ready Filter,' which displays the percent of ready aircraft compared to the prescribed maximum number of aircraft in the air group unit and the 'Percent Total Filter,' which displays the percent of total aircraft (ready, damaged and reserve) compared to the prescribed maximum number of aircraft allowed in the air group unit. Only one of these filters can be active at a time; setting one will automatically disable the other. The 'Load Outs' filter allows the player to select between hidden (nothing displayed), auto (displays the load out data for all air group units with load out set to AUTO), and manual (displays the load out data for all air group units that the player has manually selected a load out other than auto). The Air Directive filter toggles through each type of air directive for those air group units manually assigned (5.3.4), and the Pilots filter toggles between all and missing, which displays all air group units with fewer pilots than maximum or ready aircraft in the air group units. Selecting 'Clear All Filters' will clear any filters as well as any active column header sorting.

26.2.5. LEADERS TAB

This tab lists all the phasing player's leaders that can be assigned (command) headquarters units (11). It consists of only one view, with no functions section.

26.2.5.1. LEADERS TAB MAIN VIEW

Underneath the Leaders tab will display the total number of leaders currently selected. This number will change as leaders are filtered or sorted out of the view. The following information is provided by column headers, all of which can be selected to sort their columns:

Name: Leader's name in last name, first name format. Selecting a leader's name will bring up the Leader Detail window (5.4.21).

Nat (Nationality): Leader's nation.

Rank: The leader's current rank (11.1). Selecting a leader's rank will bring up a filtered list of just those leaders with that rank.

Unit: If the leader is currently in command of a headquarters unit, the HQ unit's name will be listed. Otherwise this column will have a hyphen (-).

Leader Ratings: These eight columns display the current leader ratings (11.2) in the order of Political (Pol), Morale (Mrl), Initiative (Ini), Administration (Admin), Mechanized (Mech), Infantry (Inf), Air, and Naval (Nav).

Restr (Restrictions): Displays any restrictions regarding the type of headquarters units that the leader can be assigned. Restrictions are Ground Only (GO), Air Only (AO), Ground and Air (-) and SS Only (SS).

MaxC (Maximum Command Level): Displays the maximum level of headquarters unit a leader can command. Maximum Command levels are Corps/Army (C/A), Army Group (AG), and High Command (HC).

DC (Dismissal Cost): Displays the cost in administrative points to dismiss the leader.

Vic (Victories): Displays the current number of victories (wins) that the leader has earned.

Def (Defeats): Displays the current number of defeats (losses) that the leader has earned.

Fate: Displays whether a leader is active (alive) or dead. Active leaders are marked with a hyphen (-). Dead leaders are marked as either killed in action (KIA) or executed (EXC) upon dismissal.

26.2.5.2. LEADERS TAB DISPLAY FILTERS

The Leaders tab has multiple types of unit display filters. The Leader HQ Type filters are on/off toggles that allow the player to determine the type of headquarters units to be listed. They can be toggled individually or globally using the 'ALL' or 'None' filters. In addition, there are separate filters for the different categories of command restrictions and the maximum command level.

There is also a 'Fate' filter that toggles between all leaders, active leaders, and dead leaders (KIA/EXC). Another filter toggles between each country, which is defaulted to all countries. Selecting 'Clear All Filters' will clear any filters as well as any active column header sorting.

26.2.6. BATTLES TAB

This tab lists all ground battles and air missions that have taken place during both the phasing player's current turn and the preceding non-phasing player's turn. The default listing is in the exact order they were conducted. There is a Ground view and an Air view, the difference being in the type of losses displayed. Underneath the Battles tab will display the total number of battles currently selected. This number will change as battles are filtered or sorted out of the view. This tab does not have a functions section and there are no specific display filters, only the 'Clear All Filters' link, which will clear any active column header sorting. The following information is provided by column headers, all of which can be selected to sort their columns:

Near: Displays the name of the closest town, city or urban hex to the battle.

Loc (Location): Lists the hex location where the battle took place in X, Y coordinates. Selecting the location will bring up the map area in Battle Locator mode (26.3.12), with the battle hex selected and the combat resolution report for that battle displayed.

Attk (Attacker): Displays the side, Axis (Ax) or Western Allied (WA) that initiated the attack or air mission. If a hyphen (-) is displayed, this indicates an isolated unit that surrendered during the previous logistics phase.

Result: Displays the result of the attack or air mission. Partisan attacks are all listed as 'partisan.'

Type: Displays whether ground attacks were deliberate or hasty (15.2). Partisan attacks and air missions will be marked with a hyphen (-).

Attacker and Defender: These two headers each have three column headers underneath them that display the composition of the forces involved on each side. The three columns in the ground view list the number of men, guns, and armoured fighting vehicles (AFV), while the three columns in the air view list the number of fighter aircraft (Ftr), bomber aircraft (Bmr) and utility aircraft (Utl) involved in the battle or air mission.

Attacker and Defender Losses: These two headers each have three column headers underneath them that display the losses for each side. The three columns in the ground view list the number of men, guns, and armoured fighting vehicles (AFV) lost, while the three columns in the air view list the number of fighter aircraft (Ftr), bomber aircraft (Bmr) and utility aircraft (Utl) lost in the battle or air mission.

Defender Escaped: This header is only displayed in the ground view and has three column headers underneath them that display the number of the defenders men, guns, and armoured fighting vehicles (AFV) that were not destroyed as a result of a unit shattering or surrendering and will thus be returned to the applicable production pools (15.10).

26.2.7. LOCATIONS TAB

This tab lists all of the town, city and urban hexes controlled by the phasing player, both on and off map. Underneath the Locations tab will display the total number of locations currently selected. This number will change as locations are filtered or sorted out of the views. There are three views available in the Locations tab. The Storage view (default) displays supply, resources and oil stored at the location compared to the requirement for those items as well as the number of air base units and anti-aircraft support units. The Industry view displays the number of factory points of each general type of factory and any damage to those factories. The Depot view displays depots by location and type and provides supply priority, freight and vehicle status. This tab does not have a functions section.

All of the views have the following column headers:

Name: Town, city or urban hex name.

Nat (Nationality): Nationality of the town, city or urban hex. Control of a hex by the opposing side does not change nationality. Selecting a particular nationality within this column will bring up a filtered list of just the town, city or urban hexes of that nation.

Loc (Location): Lists the current hex location of the town, city or urban hex in X, Y coordinates. Off-map locations are marked with an asterick (*). Selecting a location will bring up the applicable city detail window (26.3.28) and for on-map locations will select the hex. For off-map locations, the previously selected on-map hex will remain selected.

Pop (Population): Displays the permanent population of the town, city or urban hex (6.1, 6.2).

26.2.7.1. LOCATION TAB STORAGE VIEW

The storage view consists of the following additional column headers:

AB/AA: Number of air base units and anti-aircraft (AA) support units located in the town, city or urban hex (8.3, 7.4.1).

Current Storage and Storage Requirements: These eight columns display the amount in tons of supplies (Sup), fuel (Fuel), resources (Res), and oil (Oil) currently stored in the hex as well as the required amount of supplies (SupR), fuel (FuelR), resources (ResR), and oil (OilR) needed by the town, city or urban hexes, which is based on the number and type of factories located there.

unitSup: Number of units receiving supply (freight) from the depot in that town, city or urban hex.

26.2.7.2. LOCATION TAB INDUSTRY VIEW

The industry view consists of fourteen additional column headers that display the number of factory points for the following types of factories: Manpower (Man), Heavy Industry (HI), Synthetic Fuel (SFuel), Resources (Res), Fuel (Fuel), Oil (Oil), Generic Vehicles (Veh), Armament (Arm), Armoured Fighting Vehicles/Combat vehicles (Afv), Aircraft (Air), Railyard (Rail), Ports (Port), V-Weapon (V-WF), and U-Boat (UB). It also lists V-Weapon Sites (V-WS). For aircraft and AFV/Combat vehicle factories, the number of factory points is the sum of all those types of factories. For example, Hannover has seven different AFV/Combat vehicle factories, for the total of 18 factory points

listed in the industry view. If a factory type has suffered damage, the percentage will be displayed in parentheses next to the number of factory points of that type of factory.

26.2.7.3. LOCATION TAB DEPOT VIEW

The depot view consists of six additional column headers that display the following information:

Depot: Lists the type of depot (20.1.6) as National Src (National Supply Source) (Type 4), Port Src (Port Supply Source) (Type 3), Port (Type 2), or Railyard (Type 1). A dash (-) indicates that no depot currently exists in that town, city or urban hex.

Pri (Supply Priority): Current supply priority of the depot. Selecting the number allows the player to set that depot's supply priority from 0-4. Selecting the check box or the 'Enter' key without inputting a number will change the supply priority to 0.

Freight: Current amount of freight in tons stored in the depot.

Unused Vehicles: Vehicles assigned to the depot that are still available for the transport of freight in the turn.

Used Vehicles: Vehicles assigned to the depot that have been used to transport freight this turn and are no longer available.

26.2.7.4. LOCATION TAB DISPLAY FILTERS

The Location tab has four different filters (Enemy Location, Captured, OnMap, and Damaged Factories) that show a particular status, with a toggle between all locations, locations with that status and locations without that status (non). The default is 'ALL' with the exception of Enemy Location where the default is 'Friendly.' For Enemy Location 'Enemy' and 'ALL' settings, only the type of depot if present will be displayed along with name, nationality, location, and population. Selecting 'Clear All Filters' will clear any filters as well as any active column header sorting.

26.2.8. EQUIPMENT TAB

This tab is a reference database that provides information on all equipment and devices included in the game for both sides. There are three views; ground elements (default), aircraft, and weapons (devices). Depending on the view selected, underneath the Equipment tab will display the total number of ground elements, aircraft, or weapons (devices) currently selected. This number will change as equipment is filtered or sorted out of the views. For the ground element and aircraft views, the player can compare two different ground elements or aircraft by using the ground element or aircraft 'Compare' windows (26.2.8.5).

26.2.8.1. EQUIPMENT TAB GROUND ELEMENTS VIEW

This view has the following column headers:

Name: Lists the name of each ground element, which is segregated under a class header (e.g. Infantry, AFV, Armoured cars, etc.). Selecting a ground element will bring up the ground element compare selection window.

Nat (Nationality): Lists the nationality of each ground element.

Type: Lists the specific type (26.1.4) for the ground element.

SDate (Start Date): Lists the month and year that the ground element equipment went or will go into production.

EDate (End Date): Lists the month and year that the ground element equipment stopped or will stop production.

Upg (Upgrade): Displays whether the ground element will be upgraded by listing the identification number (ID) of the upgrade ground element from the game editor ground element editor section (game editor .pdf). If a ground element does not have an upgrade, this column will be marked by a hyphen (-). Selecting the upgrade ID number will bring up the ground element compare window with the ground element compared to the upgrade ground element.

Ground Element Characteristics: These six columns provide the number of men (Men), the tactical speed (Spd), size, fuel usage (Fuel), ammunition usage (Ammo), and reliability rating (Rel) for the ground element.

Production Information: These two columns provide the cost in supplies to build the equipment in the ground element and the maximum number of the equipment that can be built (BldLim) at a single location.

Armor: The armor rating of an AFV/Combat vehicle expressed in terms of front (FArm), side (SArm), and top (TArm) armor.

Load: Lists the load cost for rail, naval and air transport (if applicable) of the ground element.

26.2.8.2. EQUIPMENT TAB AIRCRAFT VIEW

This view has the following column headers:

Name: Lists the name of each aircraft model. Selecting an aircraft will bring up the aircraft compare selection window.

Nat (Nationality): Lists the nationality of each aircraft.

Type: Lists the functional type (8.1.5) for the aircraft.

SDate (Start Date): Lists the month and year that the aircraft went or will go into production.

EDate (End Date): Lists the month and year that the aircraft went or will stop production.

Upg (Upgrade): Displays whether the aircraft will be upgraded by listing the identification number (ID) of the upgrade aircraft from the game editor ground element editor section (game editor .pdf). If a aircraft does not have an upgrade, this column will be marked by a hyphen (-). Selecting the upgrade ID number will bring up the aircraft compare window with the aircraft compared to the upgrade model.

Aircraft Characteristics: These nine columns provide the number of aircrew, including the pilot, in the aircraft, the maximum speed (SpdM), cruising speed (SpdC), climb rate, maximum altitude (Alt), maximum load, endurance (Endr), range, ammunition load and fuel load.

Production Information: These two columns provide the cost in supplies to build the aircraft and the maximum number of aircraft that can be built (BldL) at a single location.

Arm (Armour): Lists the armour rating for the aircraft.

Dur (Durability): Lists the durability rating for the aircraft.

Mnvr (Manoeuvre): Lists the manoeuvre rating for the aircraft.

Rel (Reliability): Lists the reliability rating for the aircraft.

26.2.8.3. WEAPONS (DEVICES)

This view has the following column headers:

Name: Lists the name of the weapon (device).

Type: Lists the type of weapon/device (e.g. heavy gun, general purpose (GP) bomb, radar detector, drop tank, etc.). Selecting a particular type within this column will bring up a filtered list of just that type of weapon (device).

Weapon (Device) Characteristics: These thirteen columns provide information on the weapon (device) load cost, effect (Eff), range (Rng), accuracy (Acc), range ceiling for AA guns (Ceil), rate of fire (RoF), blast radius (Blast), anti-air target (AAir) efficiency, anti-soft (ASoft) target efficiency, anti-armor (AArm) target efficiency, target penetration (Pen) efficiency, High Explosive Anti-Tank (HEAT) efficiency, and High-Velocity Armor-Piercing (HVAP) efficiency.

26.2.8.4. EQUIPMENT DISPLAY FILTERS

The Equipment tab has three different filters; Nation, Axis and Allied, that are not applicable to the weapons (device) view. The nation filter toggles between individual countries and has all countries as a default. The Axis and Allied filters toggle between 'yes' and 'no,' with 'yes' as a default. Selecting 'Clear All Filters' will clear any filters as well as any active column header sorting, which is applicable for all views.

26.2.8.5. COMPARE WINDOW

The compare window allows the player to look at the information contained in the applicable equipment view of two different ground elements or two different aircraft. This window can be accessed either through the name or the upgrade column. If using the name column, the compare window brings up the selected ground element or aircraft on one side and a list of all other ground elements or aircraft on the other side. Selecting a ground element or aircraft will bring it up to complete the compare window. For the ground element view, there is a 'Same Class' check box that lists just the ground elements listed under the type header (26.2.8.1). Un-checking the box will allow the player to select from all ground elements currently selected. If the upgrade column is used to access the compare window, it will automatically bring up the upgrade ground element or aircraft model on the other side of the compare window.

Each side of the compare window has four sections as follows:

Name, type silhouette, country flag and picture.

Weapon (Device) detail section containing the same information as in that view of the equipment tab for the currently selected weapon (device).

Ground element or aircraft detail section containing the same information as in that view of the equipment tab for that ground element or aircraft. The one exception is the upgrade field, which will list the name of the upgrade rather than the ID number.

In addition, selecting the upgrade name will bring up that ground element or aircraft as the other side of the compare window.

List of Weapons (Devices) in the ground element or aircraft in the same format as the ground element or air group detail window (26.3.21, 26.3.19). The currently selected weapon (device) will be in red text and its details will be shown as described above.

Selecting the name of a weapon (device) will change the detail section to display its details.

26.3. APPENDIX C: INTERFACE SCREENS AND WINDOWS

The following is a detailed description of the screens and windows associated with the interface, to include how they are accessed.

GAMEPLAY INFO

Certain action links in Detail Windows will only display if that particular unit is eligible to conduct that action. Examples include units that do not meet the criteria to disband, merge or go into static mode, units that have been motorized and combat units no longer eligible to attach support units.

26.3.1. ORDER OF BATTLE (OOB) SCREEN

This screen can be accessed from the info screens menu tab toolbar (5.1.2.2) or hotkey 'o' and provides the phasing player a complete Order of Battle down to the individual unit level and also provides a summary of the status of each country's army and air force. At the top of the screen is a symbol that links to the metrics screen (26.3.31).

On the left side of the screen is the phasing players complete OOB. The initial display shows the high command level HQ's. By

selecting the [+] links next to each HQ, the player can expand the OOB to display the headquarters, combat, air base, air group and support units attached to each headquarters unit, to include support units attached to combat units and anti-aircraft (Flak) support units directly attached to cities. Selecting the [-] link for headquarters units that have been expanded out will contract them back. There is also a +/[-] link that will expand or collapse all of the HQ's in the OOB.

Each ground HQ unit in the OOB will have the total number of men (inf), guns, and AFV listed just below its name. All other ground units, to include air base units, will have the same information listed next to its unit name in the OOB. Air HQ units will have the total number of ready fighter, bomber and auxiliary aircraft listed just below its name. Attached air group units will be listed with the model and number of ready aircraft.

Selecting a ground unit name will close the OOB screen and take the player to the applicable unit's detail window. Closing the detail window will take the player back to the map area and the hex that the unit is located in will be selected unless it is an off-map support, in which case closing the support unit detail window will take the player to its HQ unit. Air group units do not have a link to their detail window.

At the bottom of the screen are check boxes that allow the player to filter six different types of units in and out of the OOB display. The unit types are support, combat, construction support, air group, air base, and amphibious HQ. Default setting is all units included in the OOB.

The right side of the OOB screen provides a graphic display of the status of Axis (Germany, Italy, Axis Allies) and Western Allies (Britain, USA, Western Allies) army and air forces by showing the number of men, guns, AFV and aircraft in the format xxx (xxx), where the first number is the total number and the second number in parentheses is the number that are ready (undamaged). Note that the air force numbers displayed do include aircraft that are attached to the national air reserve (8.5).

26.3.2. SHOW LOSSES SCREEN

This screen can be accessed from the info screens menu tab toolbar (5.1.2.2) or hotkey 'I' and provides the phasing player a summary of each side's current casualties (damaged and destroyed) and permanent losses in terms of men, to include pilots KIA, aircrews, guns, AFV's, vehicles, transport ships, and aircraft. A per turn listing of destroyed or disbanded units is also provided. There are a total of three screens (ground losses, air losses, and destroyed and disbanded units) that can be accessed as part of the Show Losses Screen.

26.3.2.1. GROUND LOSSES

Accessing the Show Losses Screen brings the player to the Ground Losses screen. The left side of the screen lists permanent losses by individual type of Ground element displayed in the following columns:

Nationality

Ground Element type, to include vehicles and transport (troop or cargo) ships

Permanent Losses

Battle just conducted (any action taken after a battle will reset this column to zero)

Losses during the current turn

Total losses during the game

The right side of the screen lists losses in numbers of individual men, guns and AFV's for each side displayed as follows:

Recent Battle and non-combat casualties. This includes men, guns and AFV's destroyed or damaged by combat in the most recent combat or attrition losses determined during the preceding logistics phase. This column is reset to zero by any action taken after the battle or at the start of the phasing player's action phase. Since this counts 50% of ready elements that are damaged and damaged elements that are destroyed, and 100% of ready elements that are destroyed, as casualties, this column will not be the same as the permanent losses.

Permanent Losses (elements destroyed or in some cases a portion of elements that are sent back to the pool)

Losses during the current turn

Total losses during the game. There are three additional rows under the total column that list the number of men killed, captured or disabled. Note that some disabled men are returned to the manpower pool over time, in effect, reducing the permanent losses. For the Western Allies player, the number of men disabled is the combined total of both the US and the all other nations disabled pools.

The 'Type of Losses' section at the bottom of the right hand side of the ground losses screen allows the player to select the air losses or destroyed unit screens. Note that Western Allied Italian units are not counted in the total losses shown on the losses screen as these losses are not counted for victory purposes.

26.3.2.2. AIR LOSSES

The left side of the screen lists permanent losses by individual aircraft make and model, for example JU-88A, displayed in the following columns:

Individual Aircraft type

Permanent Losses

Battle just conducted (any action taken after a battle will reset this column to zero)

Losses during the current turn

Total losses during the game

The right side of the screen lists Pilots KIA and aircraft losses by type, for example Fighter, and further breaks down the reason for the aircraft loss as follows:

Recent Battle and non-combat casualties. This includes aircraft destroyed by combat in the most recent battle (unlike ground losses, it does not count damaged aircraft). This column is reset to zero by any action taken after the most recent battle or at the start of the phasing player's action phase.

Permanent Losses

Losses during the current turn

Total losses during the game. There are four additional rows under the total column that list the overall number of aircraft lost due to air combat, anti-aircraft (flak) fire, lost on the ground, or non-combat operational losses. These totals are a subset of the total losses, not separate losses.

The 'Type of Losses' section at the bottom of the right hand side of the ground losses screen allows the player to select the ground losses or destroyed unit screens.

V1.00.07 – 19 December 2014

Made medium/heavy flak fire more effective at higher altitudes

26.3.2.3. DESTROYED AND DISBANDED UNITS

This screen provides a by turn list of each unit destroyed or disbanded as well as a running total by type of unit. Disbanded enemy units will not be displayed or reflected in the totals.

The left side of the screen lists each turn with the number of friendly units destroyed and disbanded, to include merged units, as well as the number enemy units destroyed that turn. Select [+} or [-] to expand or fold each turn. Under each turn are the following columns:

Turn number

Nationality

Name of unit

Unit type

Disband, where disbanded units are indicated by an 'X' in that column.

The right side of the screen lists the running totals of destroyed units for each side by type. Friendly disbanded units are included in the total, but are not broken out as such. The three totals presented are previous turn, current turn, and over all game totals.

26.3.3. PRODUCTION SCREEN

This screen can be accessed from the info screens menu tab toolbar (5.1.2.2) or hotkey 'p' and displays production information for aircraft, ground element equipment, supply, manpower, and various other inputs to the production process. The phasing player will only be able to see information for their side. At the top of the screen is a symbol that links to the metrics screen (26.3.31).

The left side of the screen is broken down into four sections; manpower (visible when 'All Areas' is selected), special (general category to cover other inputs into the production system), air (aircraft), and ground (ground elements).

V1.00.21 – 18 February 2015

The Production Screen is now sorted by alphabetical order within each type.

26.3.3.1. MANPOWER

This section is displayed only when 'All Areas' is selected in the right hand of the screen in the Production by Nationality and Availability section (26.3.3.3). It lists data for each nation on that player's side that has a separate manpower pool. None of the data is linked. It consists of four applicable columns (Damaged and Units columns are N/A) as follows:

Nationality: Lists two letter abbreviation and nation. For example, BZ Brazil is the pool for Brazilian manpower.

Capacity: Number of factory points producing manpower.

Pool: Amount of manpower in the applicable pool.

Built: Total amount of manpower produced since the beginning of the current scenario.

26.3.3.2. SPECIAL SECTION:

The special section lists all factories that do not produce aircraft or ground elements, to include ports, railyards, manpower, generic vehicles, heavy industry, oil, fuel, synthetic fuel, resource, and armament production. Also included are German V-Weapon sites and factories and U-Boat factories as well as data on Hiwis (7.2.2.1). All special factory pool and built values are displayed in thousands of tons, annotated by number with a K next to it. Note that the value is always rounded down, so 900 tons will display as 0k. This section consists of 6-7 columns as follows:

Nationality: Two letter abbreviation for German (GE) V-Weapon sites and factories and U-Boat factories.

Factory name: Each name links to the applicable city production window (26.3.4), with the exception of the Hiwis.

Capacity: Total number of factory points, whether damaged or undamaged, that can produce the item.

'A' indicates an item produced by Armament Production factories, except in the case of Vehicle Repair which does not actually require factories of any kind and are repaired automatically per section 21.1.6.

Damaged: Number of factory points that produce that particular item that have suffered fifty percent or greater damage.

Pool: Number of that type of item in the applicable pool. In the case of the special section, this column is not applicable to ports, railyards, and German V-Weapon sites and factories and U-Boat factories.

Built: Total amount of that type of item produced since the beginning of the current scenario.

Units: This column is not applicable for the special section and will always display zeros unless the scenario includes German units with Hiwi support units.

26.3.3.3. AIR AND GROUND SECTIONS

These sections consist of seven columns as follows:

Nationality: Lists the two letter abbreviation for the nation producing the item. There is a generic American (AM) pool that is used by many Allied countries that use American (US) equipment. There is also a generic Commonwealth (CW) pool that is used by many Allied countries that use British equipment. For example, the 3rd Polish Infantry Division TOE will include CW 17 Pdr Anti-tank Guns.

Name: Aircraft, ground element and/or factory name

Each name links to the applicable city production list window (26.3.4)

All aircraft and ground element types are coded in the production screen as follows:

Currently in production: no symbol

Obsolete (no longer in production): '#'

Future (not in production yet): '**'

Capacity: Number of factory points either producing the item (or that will produce the item for future items).

'A' indicates an item produced by Armament Production factories. Aircraft, AFV's, and combat vehicles are produced by specific factories, but all other ground element devices are built using generic armament points produced by Armament Production factories.

Damaged: Number of factory points that produce that particular item that have suffered fifty percent or greater damage.

Pool: Number of that type of aircraft or ground element equipment available to be used as replacements.

Built: Total number of that type of aircraft or ground element equipment produced since the beginning of the current scenario.

Note that these numbers are for what was actually built for use in the particular scenario, and may not be all items built by the production system (21.3).

Units: Number of units that contain that type of aircraft or ground element. Selecting the number will take the player to the Commander's report screen and display a list of the applicable units.

V1.00.00 – 21 November 2014

Added plane shortage numbers on the production screen (numbers in red, they indicate how many a/c of this type are needed by the units using them to reach full strength).

26.3.3.4. PRODUCTION BY NATIONALITY AND AVAILABILITY

The top right side of the screen allows the player to view production by nation/group of nations, occupied areas or all areas. Selecting 'All Areas' will also display the Manpower section at the top of the left side of the screen (26.3.3.1). The Western Allies screen is divided into USA, Britain, and Other, which includes the rest of the nations that have forces present in the game, to include the Free French. Occupied for the Axis is all areas that aren't covered by one of the other nations. For example, Poland and Czech are not in the 'Occupied' section since they have special partial manpower production that makes its way to the German pool. Selecting a specific nation will display its name and flag. Selections that include multiple nations will display an appropriate set of flags. The numbers in parentheses by each nation is the percentage of total production available in the scenario (21.3). For certain nations, such as Poland, a second number will indicate the percentage of total manpower available. Surrendered nations will show 0 percent production on the production screen. Selecting a nation will display only that nation's production data. Selecting 'Occupied' will display the data from the 'Special' section pertaining to factories in enemy town, city and urban hexes occupied by that player. The American (AM) equipment pools are displayed in the production screen when USA is selected, while the Commonwealth (CW) pools are displayed when Britain is selected. All are shown when viewing All Areas.

26.3.3.5. PRODUCTION AND STORES INFORMATION

The center right side of the screen provides a summary of manpower, fuel, oil, supply, resources, vehicle, and transport ship related information for all areas or individually selected nation or occupied areas as follows:

The first number is the main value of the total what's in the pool, or stores (what's in specific locations) or units, and the second number in parentheses is the total amount of the item needed (either by the units, or in the case of the pools and stores the amount locations want to have for their economic and storage requirements (location needs as opposed to unit needs). The only exception is vehicles in the depots where the first number is all vehicles in the depots, and the second number is the number of vehicles that have been used by depots during the turn to deliver freight (at the start of the turn it was what was used during the logistics phase, and then it goes up as more get used during the air resolution phase, and probably can go up some more as "emergency" deliveries of ammo and fuel happen during the movement phase).

Manpower in Cities/Towns: Total number of manpower factory points (Poland and Czech values will be 0 when viewing their specific country values).

Fuel Stores: First number is total amount of fuel in storage in towns, cities and urban hexes. Second number in parentheses is the total amount of fuel needed in locations for their economic and storage requirements.

Oil Stores + Pool: First number is total amount of oil in storage and in pool available to be refined into fuel. Second number in

parentheses is the total amount of oil needed in locations for their economic and storage requirements.

Supply Stores: First number is total amount of supplies in storage in towns, cities and urban hexes. Second number in parentheses is the total amount of supplies needed in locations for their economic and storage requirements.

Resource Stores + Pool: First number is total amount of resources in storage and in pool. Second number in parentheses is the total amount of resources needed in locations for their economic and storage requirements.

Supplies in Units: Total amount of supplies at the units. Number in parentheses is total amount of supplies needed to bring all units up to 100 percent.

Ammo in Units: Total amount of ammo at the units. Number in parentheses is total amount of ammo needed to bring all units up to 100 percent.

Fuel in Units: Total amount of fuel at the units. Number in parentheses is total amount of fuel needed to bring all units up to 100 percent.

Supplies in Pool: Total amount of supplies in the pool.

Fuel in Pool: Total amount of fuel in the pool.

Vehicles in Units: Total number of vehicles attached to units. Number in parentheses is total number of vehicles that would be needed to bring all units up to 100 percent.

Vehicles in Pool: Total number of vehicles in that side's motor pool. Note that vehicles in the motor pool are those not yet assigned to units or depots.

Vehicles in Repair: Total number of vehicles being repaired.

Vehicles in Depots: First number is total number of vehicles assigned to depots. The second number in parentheses is the number of vehicles that have been used by depots during the turn to deliver freight. Note that this number will change as vehicles are used during the logistics phase, the air execution phase, and for any deliveries of ammo and fuel happen during combat in the movement phase.

Troop Ships: Total number of troop ships in the shipping pool and assigned to amphibious HQ units. For the Axis player, this will be two numbers separated by a slash, first for troop ships in the Atlantic Ocean area and the second for troop ships in the Mediterranean Sea area.

Cargo Ships: Total number of cargo ships in the shipping pool and assigned to amphibious HQ units. For the Axis player, this will be two numbers separated by a slash, first for cargo ships in the Atlantic Ocean area and the second for cargo ships in the Mediterranean Sea area.

26.3.3.6. PRODUCTION FILTER, SHOW TYPES, AND POOLS

The bottom right side of the screen has three links to modify the production display. The first is a production filter that allows the player to toggle between all aircraft and ground element production and aircraft and ground elements currently in production only, to include ground elements built using armament points. The default setting is 'Production Filter OFF.'

The second is a 'Show types/Hide types' toggle. When 'Show types' is selected, headers are displayed that divide aircraft and ground elements into functional types (i.e. fighter, bomber, light tank, rifle squad, AT gun). The default setting has the functional type headers hidden.

The third link allows the player to toggle between active pools, transit pools, and all pools (21.1). The default setting is 'All pools.'

26.3.4. CITY PRODUCTION LIST WINDOW

This window is accessed by selecting a particular factory name from the production screen (26.3.3). The following information is displayed:

Name of Factory: Aircraft, ground element or generic factory name. US and America (AM) off map factories will be designated America armor or America aircraft

Factory Location: Listed by name of town, city or urban hex. For items produced by using armament points, this section will be blank.

Name of town, city or urban hex with a link to the hex on the map. Some factories are located off-map and will not have a link.

Capacity: Number of factory points that can produce the item, to include obsolete and future production.

Damage: Percentage of damage suffered by that type of factory. (Future production factories cannot be damaged).

Upgrade: Displays upgrade path for aircraft or ground elements that are either upgraded from or upgraded to different items.

The applicable item or items are listed along with the total number of factory points for each item, with any damaged factory points displayed in parentheses. The upgrade path is described, using 'From' for items that will be upgraded and 'To' for the upgraded item itself. If there is no upgrade, this part of the window will just list the item with total number of factory points. Other items listed are linked to their city production list window.

The right side of the window displays much of the same information displayed in the air group unit or ground weapon element detail window (26.3.19 26.3.21), with the addition of the following:

Expansion Rate: The rate of growth in the number of factory points that produce the item. A zero for any non-generic factory (those not in the special section) indicates that the number of factories will increase, but at a much slower rate. Generic factories with a 0 expansion rate will never grow in size, but may change their production multiplier over time (21.1).

Build Cost: Amount of supplies required to build an aircraft or ground element

Build Limit: Maximum number of items that can be built per factory location, so a specific factory type will be limited to that number of factory points for each location. A zero indicates that there is no limit.

GAMEPLAY NOTE

For most factories from the special section of the production screen, the right side of the window is a generic template that is not applicable.

26.3.5. VICTORY SCREEN

This screen can be accessed from the info screens menu tab toolbar (5.1.2.2) or hotkey 'v.' There are three different types of victory screens, one for campaign scenarios, one for the Tutorial: Air Campaign, and one for all other scenarios (25). All of the victory screens provide a running tally of current victory points. The non-campaign scenario victory screen also displays how victory points are earned for each side during a scenario.

V1.00.29 – 19 March 2015

Added victory point bar on the campaign game victory screen.

Added the ability to set air target score modifiers for the various industry types in air campaigns. On the victory screen, each type of target that scores victory points has a number displayed between 0 and 200 that modifies the amount of points scored for that target type (VPs are multiplied by the value/100, so 200 will multiply the points scored by 2). These can be set in the editor for all factory types by clicking on the number in the victory screen, and only those with a value greater than 0 will be shown in-game on the victory screen.

V1.01.37 – 25 May 2016

Added Optional City VP item to the Options screen. This impacts campaign games if toggled on. When on, the victory screen lists that the Allies start with -1200 city victory points due to this option. However, they can earn up to 1600 city victory points in total if they occupy the cities listed in the victory screen. When the cities are captured by the Allies, the points for the city are added to the total Optional City VP total, and this amount is also reflected in the Campaign column of the City Points. For example, at the start of the 1945 campaign, Paris (worth 400 points) and Antwerp (worth 200 points) are occupied by the Allies. Thus, the Optional City Points is equal to -600 (-1200+400+200), and this amount is reflected in the City Points Campaign score. The intention of this rule is to provide additional rewards for the Axis player to accept casualties and advance into Germany. While we recommend this game option for all games, we strongly suggest that this game option be turned on when not playing with the East Front Option. This prevents the Allies from accepting a Soviet takeover of Germany, while striving to maximize bombing points and minimize casualties. This was not politically acceptable to the Allies.

26.3.5.1. CAMPAIGN SCENARIO VICTORY SCREEN

The campaign scenario victory screen is divided into three parts. The top of the screen lists the current number of Allied city control points (city points) followed by the total number of possible Allied city control points (city points) available in the scenario. Note that city points are not the same as city victory points as the city control points are divided by a date (year) adjustor to yield the actual city VPs (25.1.1). The middle part of the screen lists the the different categories of victory points (25.1.1) with a column displaying VP's gained in each category for the last turn and a column displaying total VP's for the campaign scenario. The bottom of the screen displays the game turn that the scenario ends and the scenario victory levels.

26.3.5.2. NON-CAMPAIGN SCENARIO VICTORY SCREEN

The non-campaign scenario victory screen is also divided into three parts. Each sides section is divided into a list of victory point town, city or urban hexes, an opposing side losses section, and a total current victory points section. The game turn that the scenario ends and the current victory level status is displayed at the bottom of the victory screen. See section 25.2 for the definition of victory levels in all non-campaign scenarios except the air campaign introductory scenario (25.2.1).

The list of towns, cities or urban hexes for each side has three columns for each VP hex, ET, EG, and PTS. ET (end turn) is the number of VP's that player will earn each player turn they hold that town, city or urban hex. EG (end game) is the number of VP's that player will gain if they hold that town, city or urban hex at the end of the scenario. For example, in the Bulge to the Rhine scenario, the hex with the town of Bastogne is worth 100 VP every player turn the Axis hold it and they get 150 points for having it at the end of the scenario.

The opposing side losses section has three columns as follows:

AL (Western Allies) or AX (Axis) LOST (xxx): This column provides information on the number of men, guns, AFV or aircraft of the opposing side that must be for the side to gain one victory point. The number in parentheses next to each type indicates how many of each need to be lost before a VP is gained For example, 'Men(1000)' indicates that the player will earn 1 VP for each 1000 men the opposing side loses. However, this is further modified by the number in parentheses located next to the "LOST" header, which is the percentage actual losses are multiplied by to arrive at the VP loss rate. Thus in a scenario where AX LOST(100), all Axis

losses are multiplied by 100 percent (or 1.0). If in the same scenario AL LOST(120) then all Western Allies losses are multiplied by 120 percent (or 1.2).

Number: Total number of that type of item lost.

Points: The number of victory points awarded for that type of item.

The bottom of each side's section lists the current number of victory points, which is the total of points for victory point hexes and the opposing side's losses.

26.3.5.3. INTRODUCTORY SCENARIO – AIR CAMPAIGN SCENARIO VICTORY SCREEN

The air campaign introductory scenario victory screen is divided into two parts. The top part of the screen lists the different categories of victory points (25.2.1) with a column displaying VP's gained in each category for the last turn and a column displaying total VP's for the campaign scenario. The bottom of the screen displays the game turn that the scenario ends and the scenario victory levels.

V1.00.07 – 19 December 2014

Interface changes (Air Campaign) – The air campaign victory screen no longer reports the victory points for aircraft lost during the turn (now shows N/A). The a/c loss VPs are only shown in the total column. Also note that on the top right of the map the turn VPs are also shown as N/A. Also adjusted the metrics screen to display correct VP charts for the Air Campaign.

V1.00.29 – 19 March 2015

Editor - Added ability to set VPs per plane type and number of engines for the Air Campaign games.

26.3.6. WEATHER SCREEN

The weather screen can be accessed from the info screens menu tab toolbar (5.1.2.2) or hotkey 'w' and displays the current weather conditions for the entire map area, both playable and non-playable. The playable map area is outlined in black. See section 22 for details on weather. Players can select one of four check boxes along the right side to shift the color coded display to show ground weather conditions (22.3), air weather conditions (22.2), Climate Zones (22.1), or national road systems (22.3.1). Any weather fronts currently on any part of the map area will be displayed on the weather screen as a colored circle with the abbreviation for the type of front (22.1.1). On the top left side of the screen is a link to the dominating weather condition screen, with the current dominating air weather conditions column highlighted for ease of viewing (22.1).

V1.01.01 – 30 September 2015

New Feature - Air Weather Forecasts - On the weather screen you will see two dates at the top, the current date on the left and the next turn's date on the right. When you select the next turn's date, you will see the forecast air weather for that turn. The Axis have no early forecast information on Polar Maritime, Tropical Maritime, and Polar Continental fronts until they have arrived on the map. The Allies have no early forecast information on Polar Continental fronts. For these fronts without early information, they must already be on the map before they are included in the next turn's forecast. The forecast is just that, an estimate of where the fronts will go, along with the knowledge of the dominating weather that will exist in each climate zone during the next turn. There are no forecasts for ground conditions.

26.3.6.1. DOMINATING WEATHER CONDITIONS SCREEN

This screen can be accessed from the weather screen (26.3.6) or the game editor (22). The chart matches climate zones against the time of year to display the dominant air weather condition for all hexes in that climate zone using the following letter and color codes:

Clear: C (Yellow)

Rain: R (Grey)

Heavy Rain: Hr (Olive)

Cold: Co (Light Blue)

Snowfall: Sf (Blue)

Blizzard: Bz (Dark Blue)

26.3.7. AIR DOCTRINE SUMMARY SCREEN

The air doctrine screen can be accessed from the info screens menu tab toolbar (5.1.2.2), hotkey 'd' and displays the settings that determine various parameters for the various types of air missions for each air headquarters. It also determines that percentage of ready aircraft an air group unit needs in order to participate in any mission.

The screen consists of seven tabs, one for each type of air directive and a pilots tab. Section 5.3.2 provides details on the air doctrine screens.

26.3.8. AIR DOCTRINE AIR HEADQUARTERS SCREEN

This screen can be accessed from the air doctrine summary screen (26.3.7) by selecting an air headquarters from the list on the left hand side of the screen, or by selecting the hex where an air HQ unit is located on the map and then selecting the 'Doctrines' button for that unit in the right hand unit bar. The top of the screen lists the name of the air HQ unit (links to the Air Doctrine

Summary Screen) and its air leader with the number of air directives the leader can be issued in parentheses next to his name. Underneath the HQ name are fighter, bomber and auxiliary aircraft symbols with the number of that type of aircraft in the air HQ unit.

26.3.9. REINFORCEMENT AND WITHDRAWAL SCHEDULE

This screen can be accessed from the info screens menu tab toolbar (5.1.2.2) or hotkey 'i' and consists of two parts, ground and air reinforcements and withdrawals. The initial screen displays the ground reinforcements and withdrawals. Selecting the 'SHOW AIR UNITS' link in the right top corner of the ground screen displays air reinforcements and withdrawals. Selecting the 'SHOW GROUND UNITS' reverses the process. Both screens display reinforcements and withdrawals basically in the same manner. Units scheduled to withdraw are annotated to differentiate them from reinforcements. The turn number and corresponding date of the turn are listed along with each unit that is arriving or scheduled to withdraw that turn. Ground units include the number of men, guns and AFV that will arrive with the reinforcement or the current number of men, guns and AFV in units scheduled to withdraw. Air group units will include the model of the aircraft in that unit (i.e. Ju 88D-1) as well as the number of ready, damaged, and reserve aircraft in each unit. Selecting the unit will bring up an unit detail display in the right hand side of the screen. For ground units, information will include nationality banner, name and morale of unit, and name, number (ready and damaged), experience and fatigue of the ground elements that make up the unit. Hex coordinates will be listed for reinforcements entering at a specific hex. If that hex is not eligible, then an alternate entry hex will be annotated, for example at 76,3 - > 72,0. If no hex is listed, then the reinforcement will use the standard entry rules for arrival (19.1.1). German reinforcements going directly to the East Front box (23.2) will be color coded red and display [East Front] as their entry hex.

If the Eastern Front Control Option is enabled, there will be no automatic German withdrawals (23.1.2).

V1.00.00 – 21 November 2014

Adjusted arrival/withdrawal screens. It now includes units just arrived in the current turn. If you click once on the unit name, info about the unit will appear on the right side of the screen. If the unit has just arrived and it is on the map, you can click on its name again and be taken to the unit on the map.

26.3.10. COMMANDER'S REPORT

The commander's report can be accessed from the info screens menu tab toolbar (5.1.2.2) or hotkey 'c' and is a multi-tabbed list of information on units, leaders, equipment and battles that can be sorted and filtered in numerous ways. Various screens and windows have links to or are linked from the commander's report. In addition, many unit settings can be changed for both individual units and groups of units using this screen. Details on the commander's report can be found in Appendix B (26.2).

26.3.11. SAVE GAME SCREEN

This screen can be accessed from the administration menu tab toolbar (5.1.2.2) or hotkey 'Shift-s.' The left side of the screen displays the list of folders for already saved games with any games saved without creating a folder listed underneath. Selecting a folder will display a list of already saved games and the date and time when that game was saved. The save game screen defaults to sorting the save list by date from most recent to oldest. The list of saves or folders can be sorted either alphabetically by title or by date through selection of the applicable arrow at the top of the display. Selecting the folder icon with an up arrow will take the player back to the list of folders. Selecting a save game title will bring up a description on the right side of the screen that includes the title of the scenario being played, the current turn of that scenario and whether the players are human or computer. A progress bar will display the status of saving the game file.

There are initially four buttons at the bottom left side of the screen as follows:

Save a New Game: Prompts the player to type in a name to create a new save game.

Save over Current Marked Game: Overwrites the save game that is currently selected and highlighted in green.

Delete this Saved Game: Deletes the save game that is currently selected and highlighted in green.

Create New Folder: Prompts the player to type in a name to create a new folder. Will not be displayed if an existing folder is selected.

There is a separate PBEM Save Game screen with the same type of information that will appear if PBEM is enabled.

26.3.12. COMBAT RESOLUTION REPORT AND BATTLE LOCATOR (F11)

This window displays the results of ground battles and air missions and will normally automatically display at the top of the screen during the execution of ground combat and all air missions except air group unit transfers. Setting the combat resolution message level to zero will disable the display for all combat and air missions, while setting it to level one will disable the display during air recon missions (3.3.4). Combat resolution reports for battles and air missions that have occurred during the current or previous turn can also be accessed using the Battle Locator toolbar mode (F11) and selecting the battle marker in the desired hex.

V1.00.00 – 21 November 2014

Combat Resolution Message Level - Made combat resolution message level in the air phase operate as if it is 1 less than the stated value (i.e., requires a 2 to see a combat window).

V1.01.37 – 25 May 2016

Display Change – Added new elements to the battle report to provide more information regarding fort destruction

- a. Added combat intensity (CI) value (when relevant) to the battle report (small infantry symbol with number). If CI is over 15 and engineer value is >0 or if over 30, then it is relevant (per clarified fort level reduction rules below).
- b. Added artillery fort reduction value to the battle report (small artillery symbol with number). This indicates the number of fort points reduced due to artillery fire (each point is 2% of a fort level).
- c. Engineer value in battle report is the number of fort points destroyed by engineers (combined pre and post-odds destruction per clarified rules).

26.3.12.1. COMBAT RESOLUTION WINDOW

The combat resolution window is divided into four sections. The top section displays the battle number (dependent on filter F11 mode) with carat (>) linked to the other battles in the hex, turn number and day number if air mission, turn date, ground and air weather conditions in the hex, hex coordinate, hex terrain, and [X] to close the window.

The second section displays the combat values and the modified combat values, a numerical summary of the forces participating in the battle and a running total of losses suffered due to damaged and destroyed ground elements and destroyed aircraft during the current battle. The forces are broken down by men, guns, and AFV icons for ground elements and Fighter, Bomber and utility icons for aircraft. Fighter Bombers assigned as bombers will be counted under bomber. Total numbers are in white and losses are in yellow with a minus sign. Axis forces, whether attacking or defending, are listed on the left and Western Allies forces are listed on the right. If the fort level is reduced during the battle, the post-battle display will show any reduction in fort level due to the battle in the format Fort: x->y, where x is the initial fort level and y is the reduced fort level (15.3.2).

In the third section, the left side of the window lists the Axis and the right side of the window lists the Western Allies units, aircraft, and anti-aircraft guns that participated in the battle. Combat units and support units are displayed with their combat value in parentheses. Units are grouped by HQ unit, with the commanding HQ unit marked with an asterisk and any command battle CV modifier percentage listed in parentheses next to the HQ unit 15.6.2.2. Reserve combat units successfully committed to the battle will be annotated with an 'R' next to their name (15.5). Note that only guns from anti-aircraft ground elements will be listed, though other ground elements that possess devices such as anti-aircraft machine guns (AAMG) may also be firing at aircraft. A hasty attack is annotated by an '(H)' in the header. In the case of a ground attack air mission against an air base unit, defending fighter interceptors will be listed at the top of the window, followed by a list of all aircraft by model attached to the air base unit in the format (xx:xx), where the first number is ready aircraft and the second number is total aircraft. This list will be updated automatically to reflect damaged and destroyed aircraft during the course of the battle. The percent damage done to an airfield during a bombing attack is shown as two numbers, first before the bombing and then the amount of damage done by the bombing (as in 9+35 meaning started at 9% and took 35% damage from the attack).

The results of the battle are listed in the center part with the final ratio of attacker to defender and the result of the battle (15.9).

The bottom section of the window can be accessed by selecting the 'Show Details' link at the bottom center part of the third section and consists of five tabs as follows:

General Info: Provides number of units and ground elements for each that participated in the battle, their average morale, experience and fatigue, and the number and type (recon or bomb, escort, sweep, CAP) of air missions flown during the battle. Also provides a breakdown of destroyed, damaged, and disrupted ground elements and men, with the totals categorized as the result of ground combat, air action or retreat losses. A Destroyed 'Damaged' filter is available at the bottom of the screen that when checked will display in parentheses the number of damaged ground elements and associated men that were subsequently destroyed as a result of the battle.

Ground Losses: Provides loss data for the actual ground elements for each side that participated in the battle. Columns include the total number of each type of ground element, the name and nationality of the ground element, and the number that type of ground element that were destroyed, damaged or disrupted broken down into ground, air, retreat and total losses. All numbers can be sorted from lowest to highest and vice versa. There are filters for infantry, artillery and AFV type ground elements. A Destroyed 'Damaged' filter is also available at the bottom of the screen that when checked will display in parentheses the number of damaged ground elements and associated men that were subsequently destroyed as a result of the battle. In addition, a 'Show All' filter can be checked to display all ground elements instead of just the types that incurred losses.

Ground Combat: Provides combat fire (hit) data for the actual ground elements for each side that participated in the battle. Columns include the total number of each type of ready ground element, the name and nationality of the ground element, the number of fires per element (FPE) and the number of hits per element (HPE) for that type and number of ready ground elements. Hits are broken down high explosive (HE) and armor piercing (AP) hits with the range (RNG) for those types of hits. The total number (TOT) of hits in each category is further broken down into results of destroyed (DES), damaged (DAM), and disrupted (DIS) enemy ground elements. There are filters for infantry, artillery and AFV type ground elements. A 'Weapon Stats' filter, if checked, will list the individual devices (weapons) that the ground element is equipped with and the number of hits that those devices inflicted will be listed under the TOT column. A Destroyed 'Damaged' filter is also available at the bottom of the screen that when checked will display in parentheses the number of damaged ground elements that were subsequently destroyed as a result of the battle. In addition, a 'Show All' filter can be checked to display all ground elements instead of just the types that inflicted hits on

enemy ground elements.

Air Losses: Provides data on aircraft losses for each side that participated in the battle. The columns include the aircraft model, and the number and types of losses. The four loss type columns are air to air combat (A2A), anti-aircraft losses (FLAK), operational losses (OPS), and losses of aircraft on the ground (GND).

Air Combat: Provides data on the aircraft for each side that participated in the battle as follows:

NUMxAIRCRAFT: The number model name of the aircraft in the flight (17.2) resolving the air mission.

GROUP: The parent air group unit of the aircraft flight.

MISSION: The mission the flight of aircraft conducted (RECON, BOMB, ESCORT, SWEEP, and PATROL).

EXP: The experience rating of the pilots in the aircraft flight.

ALT: The mission altitude for the aircraft flight.

DIS: The percentage of disruption to the aircraft flight, which results in a coordination penalty that reduces the effectiveness of the flight during air combat and attacks on ground targets.

KILL: The number of enemy aircraft destroyed by the aircraft flight.

LOSS: The number of friendly aircraft in the aircraft flight that were destroyed during the mission from all causes (See Air Losses above).

DAM: The number of damage points inflicted on the aircraft in the flight. Aircraft damage points are measured against the aircraft durability rating to determine if the aircraft is destroyed or just damaged.

DAMD: The number of damage points the aircraft flight inflicted on the enemy aircraft flight.

The 'SHOW LOADOUTS' filter at the bottom screen will list any load outs carried by each flight of aircraft (8.1.8) if the box is checked.

26.3.12.2. BATTLE LOCATOR (F11)

When utilizing the battle locator (F11), the combat resolution window will display the number of battles that have taken place in the selected hex (i.e. 1 of 2) and provide a link to access each battle in turn. The combats will be listed by type rather than order of occurrence, with ground battles first, followed by air missions. When battle site (F11) mode is selected, the text 'SHOW BATTLES:' with a 'FILTER' link underneath will appear to the right of the menu tabs (5.1.2). Clicking on the link brings up a list of filters for various types of ground and air combats. These filters are saved off. The player can also repeatedly select the F11 mode to shift between showing all battle sites, ground only or air only. When this is done, it automatically turns on all of the appropriate filters (i.e. all battles, all ground battles only or all air battles only).

Also when in battle locator (F11) mode, moving the mouse cursor over a hex marked as a battle site will display a pop-up with the following information:

If multiple battles occurred in that hex, the pop-up will display the number of battles that have taken place in the hex (i.e. 1 of 2), which can be cycled through by using the ':' and ';' hotkeys.

Forces Attacking and Forces Defending displayed in number of men, guns, AFV, as well as fighter, bomber (includes fighter bombers assigned as bombers), and utility aircraft

Losses for each side displayed in number of men, guns, AFV, as well as fighter, bomber (includes fighter bombers assigned as bombers), and utility aircraft

Result of combat or air mission. In some cases, there will just be a description rather than a result, such as 'Air Combat.'

When units surrender during the logistics phase, a surrender flag battle site icon will display when the battle locator (F11) is enabled. This will allow the player to obtain information on units that surrendered during the previous turn.

26.3.12.3. COMBAT RESOLUTION MESSAGE SECTION

The middle of the combat resolution displays text messages describing the battle. The amount of detail provided is determined by the combat resolution message level setting (3.3.4). Air mission and combat messages can include aircraft damaged or destroyed in air to air combat, anti-aircraft or crash-landing, air group units breaking off, number of aircraft bombing a target, damaged or destroyed enemy aircraft on the ground, disrupted, damaged, or destroyed enemy ground elements, and mission completion messages (i.e. "JU-88D takes recon photos."). Ground combat messages can include ground element fire at an enemy ground element at a specific range, result of any hit from specific devices that disrupts, damages or destroys an enemy ground element, and reduction of fortification levels in a defending hex. The halt range displayed is the last range where elements fired at each other. At the conclusion of combat, the result of the battle in terms of whether the defending units held or were forced to retreat, rout or shatter will be displayed as well as the modified combat value odds ratio that determined the winner and the loser. This ratio is in the format 'Attacker:Defender,' and is a simplified ratio with the larger term being rounded down to one decimal place and the smaller term being rounded down to one (15.9). The combat resolution message section also includes a pause and an exit button. Selecting the exit button will close the combat resolution window and take the player back to the map area with that battle ended. Selecting the pause button will freeze the combat resolution window at the current place in the battle. The combat resolution window cannot be "restarted" from that point and the exit button should be used to close the window. When utilizing the battle locator (F11), the combat resolution window is a static display that will show the last message showing the odds ratio, the final result of the battle and the exit button.

26.3.13. LOGISTICS PHASE EVENT LOG SCREEN

This screen can be accessed from the info screens menu tab toolbar (5.1.2.2) or hotkey 'Shift-e' and provides information on events that have occurred during the most recent logistics phase, in the previous turn, and during the turn, such as the results of the air execution phase. The event log is organized into sections that can be filtered in and out using the check boxes on the right hand of the screen, with the option to select or deselect all sections. All freight and supply entries are expressed in tons. The event log sections include Score, Freight, East Front, Air Execution, Partisan, Population, Replacements, Ammo, Renaming, Surrenders, Unit Arrivals, Leaders, Unit upgrades, Supply, Withdrawals, Production, Losses by Phase, and Gary Grigsby's War in the West version number. There may not be applicable events in some sections during a turn. While all the individual events are too numerous to list, a sub-section on freight has been included and below is a sample of some of the types of events that will be displayed.

Unused port and railyard capacity tonnage by nation.

Excess support squad elements that have been converted to infantry type ground elements.

Damaged AFV equipment destroyed as non-repairable rather than being returned to the pool (18.2.3.1).

Notification of arriving reinforcements and pending withdrawals (approximately four turns before the withdrawal will happen, when the unit is forced into Withdrawal mode).

Number of aircraft flying training missions to gain experience, to include aircraft damaged and destroyed during those missions.

Production information, to include export of equipment from Germany to Axis Allies.

Equipment upgrades and downgrades

Air Group Unit aircraft model changes (swaps).

Production usage percentage for non-campaign scenarios (the percentage of production that will be available during the scenario).

Production statistics for each general type of factory, to include amount produced, consumption of pre-requisite resources, oil, or supplies, and number of factory locations that did not have sufficient pre-requisites to produce items.

Ground element replacement information, sorted by ground element class and type as in the production screen.

Surrenders, disbanding and conversion of units

Leader deaths, automatic dismissals and executions, promotions and rating changes

Notification that units have been unfrozen

Notification of units being isolated, changes in the TOE of a unit and the formation of new air group units.

Number of transport and cargo ship reinforcements that have arrived.

Number of transport and cargo ships that have been lost (damaged or sunk). The Amphibious Troop ships lost value is the number of troop ships lost while assigned to Amphibious HQ units, while the total in parentheses is all troop ships lost, to include those carrying units. Due to the nature of amphibious landings and follow on logistics requirements, amphibious HQ units in water hexes supporting temporary ports will contain large numbers of ships that can be lost over time.

Version number reflecting the version being used during the execution of the logistics phase.

Every turn, the Logistics Phase Event Log will be automatically exported to the game Dat/Save directory on the player's computer in the 'logs' sub-folder as a plain text file, for example EventLog(Turn 002 7-10-43 W).txt.

26.3.13.1. FREIGHT SECTION

The freight section has two parts with information as follows (Note that this information is just for the logistics phase, so does not count what is being sent during the air phase or during the move phase):

Army Freight Data:

Replace req: Replacements required in tons of freight

Sup Need: All types of supplies needed in tons of freight

Received: Tons of freight received for replacements and all types of supplies

Lost: Tons of freight lost enroute to units

Depot Freight Data:

Freight: Tons of freight the depot had at the start of the logistics phase

Received: Tons of freight the depot received during the logistics phase

Used: The amount of tons of freight used by depots either to send to other depots or for construction purposes during the logistics phase

Shipped: The amount of tons shipped by the depot to units during log phase

Truck use: The amount of vehicles used by the depot during the log phase.

26.3.14. COMBAT UNIT DETAIL WINDOW

This window can be accessed by selecting the unit name in the unit bar or right clicking in a blank area of the unit box in the unit bar (5.2.3). It can also be accessed by selecting the combat unit hex location in the commander's report (26.2.2). This window displays detailed information on the selected combat unit, to include number of ground elements and their status, Table of Organization and Equipment (TOE), Headquarters and logistics information. There is also a link to the unit supply detail window.

The top of the screen provides the name of the combat unit. Below the unit name are icons and the number of men, guns, and AFV in the combat unit, to include numbers from any attached support units.

The left side of the screen displays the following information:

Unit Counter: A graphic of the unit counter in combat value – movement mode.

Unit Insignia: The historical unit insignia is displayed next to the unit counter for most combat units.

Unit CV: The unit's attack and defence CV will be displayed with two decimal point precision separated by a slash, for example, 10.38/121.61.

TOE: An overall description of the unit's current actual TOE represented by two numbers, with the first number being the percentage of actual TOE compared to notional TOE of only ready ground combat elements and the second number being the percentage of all (ready and damaged) ground combat elements. The TOE percentages shown on the unit detail window do not include the support elements. For example if the unit has 15 percent of its TOE combat elements ready, and another 5 percent of them damaged, TOE 15/20 will be displayed, even though the unit may have 80 percent of its support elements and thus a much higher percentage of the unit's total elements. It is this TOE percentage of ready non-support elements that is used to determine whether a unit is ready, unready or depleted. The TOE detail window (26.3.24) can be accessed here.

MAX TOE: Number that indicates the maximum percentage of replacements the ground elements of the unit can take. The maximum TOE can be set by the player in a range between 50 and 100 percent by selecting the link (20.6.4). As an exception, Fortified Zone combat units may set their Max TOE level below 50 (7.5.1).

HQ Units: Lists the Headquarters unit that the combat unit is attached (HHQ) as well as the operational headquarters (OHQ) that the HHQ is attached. (For example, the German 1st SS Panzer division is attached to the I SS Panzer Corps (HHQ), which is attached to OB West (OHQ). Selecting the name of the HHQ will allow units to be reassigned to a different headquarters by accessing the Pick New HQ window (26.3.25).

Morale: The combat unit's current morale rating.

Nationality: Lists the nation of the unit.

Unit Logistics Requirements: For supplies, fuel and ammo, the amounts are listed by type of supply on hand compared to 100 percent of need, which is the amount of that type of supply required. For support squad ground elements, the first number signifies the total support available to the unit as of the previous supply phase compared to 100 percent of the support squad ground elements need. Total support includes support squad ground elements directly attached to the combat unit as listed on the right side of the screen as well as any support squad ground elements automatically sent from headquarters units in the chain of command. Excess support squad ground elements in HQ units are parcelled out to attached combat units in range based on the need of the units. On the first player turn of each game, since the logistics phase is skipped, the combat units will not show benefits from HQ unit support squad ground elements in range. After the first player turn, these values in the unit detail window will include support squad ground elements from HQ units that were parcelled out during the logistics phase of the turn.

Construction Value: Displays the current construction value that the combat unit would use for increasing the fortification level in its hex.

Transportation Cost: Displays the transportation cost for the combat unit for strategic rail, naval transport, and amphibious transport movement as well as air transport if applicable. For units that can be air transported, a second number after a slash mark will display the air transportation cost of the unit.

Vehicles/Need: The number of vehicles actually internal to the combat unit compared to the required number of vehicles. Units on the map can suffer a movement penalty if they do not have the required number of vehicles (14.1.2).

Motorized/Non-Motorized: Displays whether the unit is motorized or non-motorized. There are 3 types of non-motorized combat units:

0 – no vehicles

1 – vehicles for supplies only

2 – vehicles for supplies and all non-infantry, non-infantry-weapon elements

These values are shown in the unit detail screen next to the word non-motorized in parentheses

Supply Status: Displays the supply status of the unit, In Supply or Isolated (20.2).

The right side of the screen has 1-5 links and three tabs as follows:

Supply Details: Links to the supply detail window for that unit (26.3.27).

Convert: Displays if multi-role combat units in the hex meet the requirements of section 7.6 and allows the combat unit to be converted to support unit mode. If the multi-role combat unit does not meet the requirements to convert, it will be designated with the plain white text Multi-Role. In both cases, Multi-Role units that would convert into three equal support units will be designated with the additional text (/3).

Merge Unit: Displays if combat units in the hex meet the requirements of section 7.5.3 and allows two units of the same type to be merged.

Motorize Unit: Displays if combat unit is eligible to be motorized. Selecting this link will triple the movement points of the unit for the turn, but at cost in vehicles drawn from the motor pool (first number) and admin points (second number) (14.1.3).

Disband Unit: Displays if combat unit is eligible to be disbanded. Allows the player to disband the unit and send its ground elements back to the respective production pools (10.3).

Elements Tab: Displays a list is a list of each type of ground element making up the unit, with information on experience (EXP), number of ready (RDY) and damaged (DAM) elements and the current fatigue (FAT) of that type of ground element. The ground element name has a link to that particular ground element detail window (26.3.21). For some German units, the number of Hiwi elements is shown in parentheses next to the ground element type. For example, the entry Support (Hiwi 2) indicates that 2 of the support squads in the unit are Hiwi squads (7.2.2.1).

Assigned Tab: Displays a link with the name of the combat unit's HHQ. If the combat unit is eligible to attach support units and has not attached the maximum allowed, 'ASSIGN SUPPORT UNITS' will link to the Pick Support Unit window (26.3.16). The link will be greyed out if the maximum allowed support unit attachments have been made. Below this will be a list of any support units that are attached to the combat unit with the name linked to the applicable support unit detail window (26.3.15). Selection of the [X] to the right of listed support unit will return that support unit to the headquarters to which the combat unit is attached. An asterisk next to the support unit means that it was attached this turn and cannot change attachments until next turn. The number of support units attached will be displayed in parentheses on the Assigned tab, to include (0) if none are or can be attached.

Air Support Tab: If the combat unit is in the chain of command (HHQ or OHQ) of an HQ unit that is being supported by a Ground Support air directive (5.3.6), the following will be listed:

Ground Support (GS) Air Directive Information: Lists the name of the air HQ unit that has been issued the GS air directive, the ground HQ unit being supported, and the air group units assigned, either AUTO or the number, with the total number of bomber and escort type aircraft available to support the air directive.

Air Group Unit Information and Selection Function: The assigned air group units' will be listed in three columns with name of the group (linked to the air group unit detail window), number and model name of ready (RDY AC) aircraft and the range. Each air group unit will have selectable symbol next to it to allow addition or removal of that air group unit from manual selection to the GS air directive (5.3.4). Note that if an air directive was set to AUTO, addition of any air group units will change the selection mode to manual and removal of all manual air group units will change the selection mode to AUTO.

26.3.15. SUPPORT UNIT DETAIL WINDOW

This window can be accessed from the attached support section of the combat unit, headquarters unit or city detail window by selecting the desired attached support unit. It can also be accessed by selecting the support unit hex location in the commander's report. The window displays detailed information on the selected support unit, to include number of ground elements and their status, Table of Organization and Equipment (TOE), Headquarters and logistics information. There is also a link to the unit supply detail window.

The top of the screen provides the name of the support unit. Below the unit name are icons and the number of men, guns, and AFV in the support unit.

The left side of the screen displays the following information:

Unit Counter: A graphic of the unit counter in combat value - movement mode.

Unit Insignia: The historical unit insignia is displayed next to the unit counter for some support units.

Unit CV: The unit's attack and defence CV will be displayed with two decimal point precision separated by a slash, for example, .93/.93.

TOE: An overall description of the unit's current actual TOE represented by two numbers, with the first number being the percentage of actual TOE compared to notional TOE of only ready ground combat elements and the second number being the percentage of all (ready and damaged) ground combat elements. The TOE percentages shown on the unit detail window do not include the support elements. For example if the unit has 15 percent of its TOE combat elements ready, and another 5 percent of them damaged, TOE 15/20 will be displayed, even though the unit may have 80 percent of its support elements and thus a much higher percentage of the unit's total elements. It is this TOE percentage of ready non-support elements that is used to determine whether a unit is ready, unready or depleted. The TOE detail window (26.3.24) can be accessed here.

MAX TOE: Number that indicates the maximum percentage of replacements the ground elements of the unit can take. The maximum TOE can be set by the player in a range between 50 and 100 percent by selecting the link (20.6.4).

HQ Units: Lists the Headquarters unit that the support unit is attached (HHQ) as well as the operational headquarters (OHQ) that the HHQ is attached. For example, the Canadian 6th CA Anti-Tank Regiment is attached to II CA Corps (HHQ), which is attached to 21st BR Army Group (OHQ). Anti-aircraft units assigned to town, city or urban hexes will have the city name listed instead of the OHQ. Selecting the name of the HHQ will allow units to be reassigned to a different headquarters by accessing the Pick New HQ window (26.3.25).

Morale: The support unit's current morale rating.

Nationality: Lists the nation of the unit.

Unit Logistics Requirements: For supplies, fuel and ammo, the amounts are listed by type of supply on hand compared to 100 percent of need, which is the amount of that type of supply required. For support squad ground elements, the first number signifies the total support available to the unit as of the previous supply phase compared to 100 percent of the support squad ground elements need. Total support includes support squad ground elements directly attached to the support unit as listed on the right side of the screen as well as any support squad ground elements automatically sent from headquarters units in the chain of command. Excess support squad ground elements in HQ units are parcelled out to attached support units in range based on the need of the units. On the first player turn of each game, since the logistics phase is skipped, the support units will not show benefits from HQ unit support squad ground elements in range. After the first player turn, these values in the unit detail window will include support squad ground elements from HQ units that were parcelled out during the logistics phase of the turn.

Construction Value: Displays the current construction value that the combat unit would use for increasing the fortification level in its hex.

Transportation Cost: Displays the transportation cost for the combat unit for strategic rail, naval transport, and amphibious transport movement as well as air transport if applicable. For units that can be air transported, a second number after a slash

mark will display the air transportation cost of the unit.

Vehicles/Need: The number of vehicles actually internal to the combat unit compared to the required number of vehicles. Units on the map can suffer a movement penalty if they do not have the required number of vehicles (14.1.2).

Motorized/Non-Motorized: Displays whether the unit is motorized or non-motorized. There are 4 types of non-motorized support units:

- 0 – no vehicles
- 1 – vehicles for supplies only
- 2 – vehicles for supplies and all non-infantry, non-infantry-weapon elements
- 4 – Railroad Flak units

These values are shown in the unit detail screen next to the word non-motorized in parentheses

Supply Status: Displays the supply status of the unit, In Supply or Isolated (20.2). Support units will have the same supply status as the unit or town, city or urban hex to which they are attached. The right side of the screen has 1-3 links and three tabs as follows:

Supply Details: Links to the supply detail window for that unit (26.3.27).

Convert: Displays if multi-role support units in the hex meet the requirements of section 7.6 and allows the support unit to be converted to combat unit mode. If the multi-role support unit does not meet the requirements to convert, it will be designated with the plain white text Multi-Role. In both cases, Multi-Role units that would convert into three equal support units will be designated with the additional text (/3).

Disband Unit: Displays if the support unit is eligible to be disbanded. Allows the player to disband the unit and send its ground elements back to the respective production pools (10.3).

Elements Tab: Displays a list is a list of each type of ground element making up the unit, with information on experience (EXP), number of ready (RDY) and damaged (DAM) elements and the current fatigue (FAT) of that type of ground element. The ground element name has a link to that particular ground element detail window (26.3.21). For some German units, the number of Hiwi elements is shown in parentheses next to the ground element type. For example, the entry Support (Hiwi 2) indicates that 2 of the support squads in the unit are Hiwi squads (7.2.2.1).

Assigned Tab (0): Displays a link with the name of the combat unit's HHQ.

Air Support Tab: If the combat unit is in the chain of command (HHQ or OHQ) of an HQ unit that is being supported by a Ground Support air directive (5.3.6), the following will be listed:

Ground Support (GS) Air Directive Information: Lists the name of the air HQ unit that has been issued the GS air directive, the ground HQ unit being supported, and the air group units assigned, either AUTO or the number, with the total number of bomber and escort type aircraft available to support the air directive.

Air Group Unit Information and Selection Function: The assigned air group units' will be listed in three columns with name of the group (linked to the air group unit detail window), number and model name of ready (RDY AC) aircraft and the range. Each air group unit will have selectable symbol next to it to allow addition or removal of that air group unit from manual selection to the GS air directive (5.3.4). Note that if an air directive was set to AUTO, addition of any air group units will change the selection mode to manual and removal of all manual air group units will change the selection mode to AUTO.

26.3.16. PICK SUPPORT UNIT AND ASSIGN AA UNIT WINDOW

The Pick Support Unit Type window is accessed by selecting the ASSIGN SUPPORT UNITS link in the Assigned Tab of the unit detail window of headquarters units and combat units eligible to attach support units. For town, city and urban hexes that can attach anti-aircraft support units, the window is accessed from the city detail window ASSIGN/FORM link. This window allows the player to view and manually transfer available support units.

The window for HQ and combat units list the name of eligible support units sorted by type (Armor, Anti-Tank, Anti-aircraft, Artillery, Engineer, Construction, etc.) the support unit's current ready TOE percentage, and the name of the HHQ that it is currently attached. For cities, the Assign AA Unit window lists the name of eligible AA units, the AA unit's current ready TOE percentage, and the name and range in hexes of the currently attached HHQ or city. For either window, selecting the name of the support unit will transfer its attachment to the selected HQ unit, combat unit or city. Unready support units will not be included. For combat units eligible to attach support units, the Pick Support Unit Type window will automatically close once the maximum number of support units has been attached.

26.3.17. HQ UNIT DETAIL WINDOW

This window can be accessed by selecting the unit name in the unit bar or right clicking in a blank area of the unit box in the unit bar (5.2.3). It can also be accessed by selecting the headquarters unit hex location in the commander's report. This window displays detailed information on the selected headquarters unit, to include assigned leader, number of ground elements and their status, attached units, Table of Organization and Equipment (TOE), Headquarters and logistics information.

The top of the screen displays the following information:

HQ Name: Lists the designation of the HQ unit

Leader Name: Assigned leader with rollover showing leader ratings and number of victories and defeats as well as link to leader detail window (26.3.22). Note that Amphibious HQ and Rail Repair HQ units do not have leaders, but below the unit name are icons and the number of men in and attached to the Amphibious or Rail Repair HQ unit.

The left side of the screen displays the following information:

Unit Counter: A graphic of the unit counter in combat value – movement mode.

Unit Insignia: The historical unit insignia is displayed next to the unit counter for most HQ units.

TOE: An overall description of the unit's current actual TOE represented by two numbers, with the first number being the percentage of actual TOE compared to notional TOE of only ready ground elements and the second number being the percentage of all (ready and damaged) ground elements. Unlike combat and support units, HQ units TOE includes the TOE of support squads. The TOE detail window (26.3.24) can be accessed here.

MAX TOE: Number that indicates the maximum percentage of replacements the ground elements of the unit can take. The maximum TOE can be set by the player in a range between 50 and 100 percent by selecting the link (20.6.4).

HQ Units: Lists the Headquarters unit that the support unit is attached (HHQ) as well as the operational headquarters (OHQ) that the HHQ is attached. For example, V US Corp is attached to 1st US Army (HHQ), which is attached to 21st BR Army Group (OHQ). Note that High Command units are their own HHQ and all air HQ units, Amphibious HQ units and many type 2 HQ units (7.7.1) may not have an OHQ listed and will be permanently assigned to the HHQ that they are attached to at the beginning of the scenario. Selecting the name of the HHQ will allow units to be reassigned to a different headquarters by accessing the Pick New HQ window (26.3.25).

Morale: The HQ unit's current morale rating.

Nationality: Lists the nation of the unit.

Unit Logistics Requirements: For supplies, fuel and ammo, the amounts are listed by type of supply on hand compared to 100 percent of need, which is the amount of that type of supply required. For support squad ground elements, the first number signifies the total support available to the unit as of the previous supply phase compared to 100 percent of the support squad ground elements need. Total support includes support squad ground elements directly attached to the HQ unit as listed on the right side of the screen as well as any support squad ground elements automatically sent from any headquarters units up the chain of command. Excess support squad ground elements in HHQ units are parcelled out to attached HQ units in range based on the need of the units. On the first player turn of each game, since the logistics phase is skipped, the HQ units will not show benefits from HHQ unit support squad ground elements in range. After the first player turn, these values in the unit detail window will include support squad ground elements from HHQ units that were parcelled out during the logistics phase of the turn.

Transportation Cost: Displays the transportation cost for the combat unit for strategic rail, naval transport, and amphibious transport movement as well as air transport if applicable.

Vehicles/Need: The number of vehicles actually internal to the combat unit compared to the required number of vehicles. Units on the map can suffer a movement penalty if they do not have the required number of vehicles (14.1.2).

Motorized/Non-Motorized: Displays whether the headquarters unit is motorized or non-motorized. There are 3 types of non-motorized units:

0 – no vehicles

1 – vehicles for supplies only

2 – vehicles for supplies and all non-infantry, non-infantry-weapon elements

These values are shown in the unit detail screen next to the word non-motorized in parentheses

Supply Status: Displays the supply status of the unit, In Supply or Isolated (20.2).

The right side of the screen has 3-5 links and three tabs as follows:

Supply Details: Links to the supply detail window for that unit (26.3.27).

Supply Priority: Link to set the supply priority for the HQ unit and attached units (20.4.2). Not applicable for Amphibious and Rail Repair HQ units.

Show Subordinates (CR): Takes the player to the Unit List section of the Commander's Report and lists the headquarters and all attached combat and support units (26.2.2).

Relocate Unit: Allows the player to relocate a headquarters unit to a friendly town, city or urban hex in supply (7.7.5). The headquarters unit and any attached support units will suffer retreat attrition. This may be done multiple times in a turn.

Disband Unit: Displays if headquarters unit meets the requirements to disband. Allows the player to disband the unit and send its elements back to the respective production pools (10.3). Not applicable for Air and High Command HQ units.

Elements Tab: Displays a list of each type of ground element making up the unit, in this case Support ground elements, with information on experience (EXP), number of ready (RDY) and damaged (DAM) elements and the current fatigue (FAT) of the support ground elements. The ground element name has a link to that particular ground element detail window (26.3.21). For some German units, the number of Hiwi elements is shown in parentheses next to the ground element type. For example, the entry Support (Hiwi 2) indicates that 2 of the support squads in the unit are Hiwi squads (7.2.2.1).

Support Unit Level: Indicates the number of each type of support unit that the computer will attempt to automatically assign to the headquarters. Next to this are links to increase (++) or decrease (--) the current support level. Selecting the number will toggle support level to LOCK and turn off the automatic movement of support units to and from the headquarters. Note that automatic assignment will not function for that particular headquarters unit if any higher headquarters unit in that HQ unit's chain, to include the High Command, is set to LOCKED (7.7.3).

Support Information:

Total Support: The total support provided to all the units under this HQ unit during the logistics phase.

Organic Support: The total ready support squads ground elements in all the units under this HQ unit during the logistics phase.

Total Support Need: The total support needs of all the units under the HQ during the logistics phase.

Assigned Tab: Displays a link with the name of the combat unit's HHQ. If the HQ unit is eligible to attach support units and has not attached the maximum allowed, 'ASSIGN SUPPORT UNITS' will link to the Pick Support Unit window (26.3.16). Not applicable for Amphibious and Rail Repair HQ units. For ground HQ units, to include amphibious HQ units, below this will be a list of all units, to include other HQ, combat, and support units, that are attached to the HQ unit with the name linked to the applicable unit detail window. The units are broken out by type (HQ, Armor, Parachute, Artillery, etc.) with the total number of each in parentheses and support units designated by a dash in front of their name. An asterisk next to the unit means that it was attached this turn and cannot change attachments until next turn. For Air HQ units, the attached air base units will be listed, with name/location, current TOE, maximum TOE setting, and number of ready (total) aircraft in air group units at the air base units. The number of units attached will be displayed in parentheses on the Assigned Tab, to include (0) if none are attached.

Air Support Tab: For Ground HQ unit or their subordinate HQ units that are being supported by a Ground Support air directive (5.3.6), the following will be listed:

Ground Support (GS) Air Directive Information: Lists the name of the air HQ unit that has been issued the GS air directive, the ground HQ unit being supported, and the air group units assigned, either AUTO or the number, with the total number of bomber and escort type aircraft available to support the air directive.

Air Group Unit Information and Selection Function: The assigned air group units' will be listed in three columns with name of the group (linked to the air group unit detail window), number and model name of ready (RDY AC) aircraft and the range. Each air group unit will have selectable symbol next to it to allow addition or removal of that air group unit from manual selection to the GS air directive (5.3.4). Note that if an air directive was set to AUTO, addition of any air group units will change the selection mode to manual and removal of all manual air group units will change the selection mode to AUTO.

NOTE

none of the above include the HQs own support info. By looking at these numbers, not only can the player see if the need was met, they can also see how much of the support was provided by the units themselves, and how much came from the HQ or higher HQs assistance (7.2.2).

26.3.18. AIR BASE UNIT DETAIL WINDOW

There are multiple ways to access the air base unit detail window. If there is no ground unit in the hex, it can be accessed directly by double left clicking on the hex. Alternatively, the detail window can be accessed through the general information and city/airfield box (5.1.5) by either selecting the airfield symbol next to the name of the city or by selecting the city name and then selecting the air base unit name located under the units attached section of the city detail window (26.3.28). The window can then be accessed by selecting the unit name in the unit bar or right clicking in a blank area of the unit box in the unit bar (5.2.3). It can also be accessed by selecting the air base unit hex location in the commander's report. The window displays detailed information on the selected air base unit, to include number of ground elements and their status, attached air group units, Table of Organization and Equipment (TOE), Headquarters and logistics information. Note that air base units are designated as type 5 headquarters units (7.7.1), however, they have a separate unit detail window due to their unique attributes (8.3).

The top of the screen provides the name of the air base unit. Below the unit name are icons and the number of men, guns, and AFV in the air base unit.

The left side of the screen displays the following information:

Unit Counter: A graphic of the standard air base unit counter.

TOE: An overall description of the air base unit's current actual TOE represented by two numbers, with the first number being the percentage of actual TOE compared to notional TOE of only ready ground elements and the second number being the percentage of all (ready and damaged) ground elements. It is this TOE percentage of ready elements that is used to determine whether a unit is ready, unready or depleted. Unlike combat and support units, airbase units TOE includes the TOE of support squads. The TOE detail window (26.3.24) can be accessed here.

MAX TOE: Setting that manages the maximum percentage of replacements the air support and other ground elements the air base unit will attempt to maintain. For air base units, this is either a number between 1 and 100 or AUTO. The default setting is AUTO, which can be toggled to 100 and then the maximum TOE can be set by the player in a range between 1 and 100 percent by selecting the link again. The air base unit can be set back to AUTO by selecting the link and entering - 1. Note that since air base units are fixed installations that can hold a variable number of air group units, air base units TOE can be set to allow the player to manually (MAX TOE 1-100) or automatically (MAX TOE AUTO) manage air support elements. In addition, the TOE can be set to essentially put the air base unit into lay up (MAX TOE 1) if it is not currently assigned any air group units (8.3.1).

HQ Units: Lists the Headquarters unit that the air base unit is attached (HHQ) as well as the operational headquarters (OHQ) that the HHQ is attached. For example, the Foggia US Air Base is attached to 15th US Air Force, which is attached to USSTAF (OHQ). Selecting the name of the HHQ will allow units to be reassigned to a different headquarters by accessing the Pick New HQ

window (26.3.25).

Morale: The support unit's current morale rating.

Nationality: Lists the nation of the unit.

Unit Logistics Requirements: For supplies, fuel and ammo, the amounts are listed by type of supply on hand compared to 100 percent of need, which is the amount of that type of supply required. For support and air support squad ground elements, the first number signifies the total support available to the unit as of the previous supply phase compared to 100 percent of the support squad ground elements need. Total support includes support squad ground elements directly attached to the support unit as listed on the right side of the screen as well as any support squad ground elements automatically sent from headquarters units in the chain of command.

Transportation Cost: Listed, but not applicable as air base units represent fixed installations.

Vehicles/Need: The number of vehicles actually internal to the combat unit compared to the required number of vehicles.

Motorized: Listed, but not applicable for movement as air base units represent fixed installations.

Supply Status: Displays the supply status of the unit, In Supply or Isolated (20.2).

The right side of the screen has 2 links and three tabs as follows:

Supply Details: Links to the supply detail window for that unit (26.3.27).

Supply Priority: Link to set the supply priority for the air base unit (20.4.2). Note that air base units with supply priority set to zero will not be resupplied.

Elements Tab: Displays a list of each type of ground element making up the unit, with information on experience (EXP), number of ready (RDY) and damaged (DAM) elements and the current fatigue (FAT) of that type of ground element. The ground element name has a link to that particular ground element detail window (26.3.21). For some German units, the number of Hiwi elements is shown in parentheses next to the ground element type. For example, the entry Support (Hiwi 2) indicates that 2 of the support squads in the unit are Hiwi squads (7.2.2.1).

Assigned Tab: Displays a link with the name of the combat unit's HHQ. Below that is an 'ASSIGN FROM NATIONAL RESERVE' link to the Select Air Group from National Reserve window (26.3.20), which allows players to manually assign air group units from the national reserve to that air base unit. Below that is a list of the air group units assigned to the air base unit with the group name linked to the air group unit detail window (26.3.19), the number and model of aircraft in that air group unit, and the percentage of miles flown (17.1.1). The display for the air group units assigned to the air base unit in the air base detail window annotates air group units that are not attached to the same air HQ unit. An asterisk (*) in front means that air group unit air HQ unit is not the same as the air base unit. Two asterisks (**) means the same as one asterisk, but indicates that the air group unit has already changed its attachment this turn, which can't be changed again until the next turn. At the bottom of the tab there is a 'SET AIR GROUP HQ to "name of HQ" (x)' link to change the air HQ unit of all air group units located at the air base unit to the same air HQ unit as the air base unit air HQ unit (8.1.13). The number in parentheses is the number of air group units that will change attachment if the link is selected. The link will be greyed out if all air group units assigned to the air base unit are attached to the same air HQ unit as the air base unit.

At the bottom of the tab

Air Support Tab: Not applicable for air base units.

V1.00.07 – 19 December 2014

Interface addition – On the Airbase Detail screen, Assigned tab, an air group that does not report to the same HQ that the airbase reports to will have an asterisk (*) next to its name.

26.3.19. AIR GROUP UNIT DETAIL WINDOW

This window can be accessed by selecting the air group unit name in the air base unit detail window (26.3.18) to which it is attached. It can also be accessed by selecting the air group unit name in the commander's report air group tab.

The unit detail screen pilot tab for air groups lists each pilot by pilot number, and shows the pilots fatigue, air kills, missions flown and health status.

Pilots can be added to an air group unit in the unit detail window, both individually and multiple pilots up to the maximum ready value.

Players can set the priority for air group units to receive replacements, to include designating units that will not receive replacements. Trained Pilots (first chance at getting replacement planes and pilots and will only take trained pilots from the pilot pool), Priority (next chance at getting planes/pilots, will accept untrained pilots), Normal (last groups to get replacements, will accept untrained pilots), Restricted (no replacements). These settings can be changed on the CR air group screen en masse or by group, and also on the air group detail screen where the current replacement setting is shown.

Load out changes, to include ability to change multiple groups. As part of the manual selection process, air group unit load outs can also be tailored by accessing the air group unit detail window (26.3.19). The load out can also be adjusted for air group units with the same model aircraft, either for all in the entire air OOB, by those in the same air directive or those attached to the same air base unit or air HQ unit. Note that if air group unit selection is AUTO, air group unit load outs cannot be specifically tailored for those in the same type air directive.

The window displays detailed information about the selected air group unit, aircraft, and pilots, to include current number and

status as well as specific ratings for the aircraft type.

The top of the window displays the air group unit name and nationality, with the model and functional type of aircraft listed below. To the right is an aircraft icon with the model number and functional type abbreviation.

The left side of the screen displays the following information:

Graphic: Picture/Silhouette of aircraft type

Air HQ: Lists the Air HQ unit that the air group unit is attached (HHQ). Selecting the name of the Air HQ unit will allow the air group unit to be reassigned to a different headquarters by accessing the Pick New HQ window (26.3.25).

Base: Air base unit to which the air group unit is attached

Grp Type (max): Lists the group type and the maximum number of aircraft (8.1.4)

Experience: Current Experience of the air group unit

Morale: Current Morale of the air group unit

Fatigue: Current Fatigue of the air group unit

Aircraft:

Ready: Number of ready aircraft in the air group unit (capable of conducting missions)

Damaged: Number of damaged aircraft in the air group unit (unable to conduct missions)

Reserve: Number of reserve aircraft in the air group unit (can be moved to ready if number of ready aircraft does not exceed maximum, pilots are available, and air base has sufficient supply and support (8.1.1)

Aircraft in Pool: Number of aircraft of that model that are currently in the production pool.

Ready Pilots: The number of pilots in the air group unit available to fly aircraft.

Aircraft Kills: Number of enemy aircraft destroyed

Traveled (%): Current percentage of miles flown by air group unit (17.1.1)

Trained as: Displayed for fighter bomber aircraft types to indicate the mission (fighter or bomber) that the air group unit has been trained to conduct. Selecting the mission type link (FIGHTER or BOMBER) will withdraw the air group unit for retraining in the other mission type (17.1.8).

Naval only: Will display YES if air group unit is only allowed to fly Naval Patrol missions. Otherwise will display NO.

The upper right side of the window displays the following:

Air Directive: If air group unit has been manually selected for a specific air directive (5.3.4), the air directive type will be listed here, for example GND ATTACK or RECON. Otherwise text will state NONE.

Mission: Displayed for fighter bomber aircraft types only to toggle between assigning air unit group to conduct either fighter or bomber missions (17.1.8). If assigned to a mission that it is currently not trained, an asterick will appear after the current mission.

Mission Setting: Toggles between five settings. Air group units can be set to operate during day only, night only, or day and night. Alternatively, air group units can be set for either training, or rest missions (8.1.2).

Replacement: Settings for aircraft and pilot replacements. Toggles between Trained Pilots (first chance at getting replacement planes and pilots and will only take trained pilots from the pilot pool), Priority (next chance at getting planes/pilots, will accept untrained pilots), Normal (last groups to get replacements, will accept untrained pilots), and Restricted (no replacements). The default is Normal.

Aircraft Change: Toggles between automatic and manual change (swap) out of aircraft model assigned to the air group unit (8.1.8). The default setting is manual, with the exception of German air group units in the East Front box that will be automatically switched to auto (23.1.3).

Auto: Computer controls upgrades or downgrades of aircraft model assigned to the air group unit.

Manual: An interface window to provide information when upgrading aircraft can be accessed when the group is set for Manual Aircraft Change. Select the '>>' link next to the 'Manual' setting. The window will display the possible aircraft alternatives and for each, the number of aircraft in the pool, the number of aircraft in air group units, and the number of factories. The player can use the selectable links to navigate back and forth between appropriate information windows. Selecting an aircraft model will also allow the player to compare it with the current aircraft model.

DISBAND: Allows the player to disband the air group unit and send its aircraft back to the replacement pool.

The center right section of the window has three tabs as follows:

Aircraft Tab:

Aircraft Statistics: Maximum Speed, Cruise Speed, Climb Rate, Max Altitude, Max Load, Radius, Sortie ammo and fuel, number of engines, Armour, Durability, Manoeuvre, Reliability, and total aircrew, which includes the pilot. Radius is used to determine distance unit can travel during a single mission. Cruise Speed and Morale are used to determine total distance unit can travel in a turn. Reliability is based on aircraft engine type and is used to determine if an aircraft becomes damaged after an air mission due to non-combat related maintenance problems. All other stats are used to determine results of air to air combat and anti-aircraft fire defense and evasion.

Aircraft Weapons: List of permanently installed devices carried by the aircraft type such as weapons, internal auxiliary fuel tanks, and electronic systems. The listing includes number, name and facing (Fwd (Forward), Side, TR (Top Rear), BR (Bottom Rear), Rear, Int (Internal), Ext (External), SM (Schräge Musik "Strange Music")).

Load Out: If applicable, lists the current load out being carried by the aircraft in the air group unit (8.1.7, 17.1.9). If additional load outs are available, players can select '>>' next to 'Load Out' to access the load out selection window (26.3.19.1).

Pilots Tab: Provides a list of pilots in the air group unit and their status. If trained pilots are available and the air group unit is

short of pilots, allows the player to add pilots and associated air crew to the air group unit.

Trained Pilot Crews: Displays the current number of available trained pilots for nationality of the air group unit. If pilots are available, and the air group unit does not already have the maximum number of pilots assigned (same as maximum number of aircraft for the group), the 'Get Trained Pilot Crew' and 'Get Max Trained Pilot Crew(s)' links will be selectable. Selecting the first will add one trained pilot and associated air crew to the air group unit while selecting the second will add a number of trained pilots and associated air crew up to the maximum number of pilots allowed in the air group unit. The two links will be greyed out if no trained pilots are available or the the air group unit already has the maximum number of pilots.

Pilot Information: Provides the total number of pilots in the air group unit and their average experience rating, which is equal to the air group unit experience rating. Below that is a list of each pilot with the following information:

Id: Pilot identification number assigned by the computer.

Type: Functional type of aircraft for which the pilot is considered specialized (8.2.2).

Exp: Pilot experience rating.

Fat: Pilot fatigue rating.

Kill: Number of enemy aircraft destroyed by the pilot and associated aircrew.

Mis: Number of missions flown by the pilot and associated aircrew.

Planes Tab:

Lists each aircraft in the air group unit by aircraft model type and provides the current damage percentage as well as the aircraft's current status, whether ready (white text), repair (red text) or reserve (red text).

26.3.19.1. LOADOUT SELECTION WINDOW

This window is used by the player to manually select load outs for the air group unit or multiple air group units with the same aircraft model and consist of the following:

Aircraft Performance Data: Lists maximum speed, climb rate, maximum altitude, radius, manoeuvre rating, and sortie ammo and fuel weight. The first set of numbers is the performance data if there is no load out on the aircraft, followed in parentheses by the change, with a minus for negative, which will occur in the performance data due to selecting a specific load out. The second set of numbers is the performance date with the specific load out selected. For example, if a load out was selected for an aircraft with a maximum speed of 295 that decreased the speed by 24 mph, the numbers would read 295 (-24) and 271.

Selected Loadout: Lists the currently selected load out and the specific performance data that changed due to the load out. In addition, any modification to endurance will also be listed.

Multiple Air Group Unit Loadout Selection: A number of links are listed that allow the player to change the load out currently selected for the air group unit for multiple air group units with the same aircraft model, to include those at the same air base unit, those in the same air HQ unit that the air group unit is attached, and all air group units with that model aircraft in that player's air OOB. In addition, if the air group unit has been manually assigned to an air directive (5.3.4), another link will display that allows the player to change all air group units assigned to that same type of air directive to the selected load out.

Available Loadouts: This section lists each load out available for the aircraft model in the air group unit and specific performance data changes. The player can change the selected load out by selecting the '>>' next to the desired load out, which will replace the current load out in the Selected Loadout section above.

26.3.20. SELECT AIR GROUP UNIT FROM NATIONAL RESERVE WINDOW

This window is accessed from the air base unit detail window 'ASSIGN FROM NATIONAL RESERVE' link located in the 'Assigned' tab (26.3.18) and displays a list of air group units in the Air National Reserve as well as allowing the player to transfer them to that air base unit. Information provided includes the air group unit designation, current experience level (EXP), number of ready aircraft (RDY) in the air group unit, total number (TOT) of aircraft in the air group unit, the model number of the aircraft in the unit (i.e. Halifax B.III), the aircraft functional type abbreviation (i.e. LB for Level Bomber) (8.1.5), and the current HHQ for the air group unit. Selecting the air group unit designation will transfer it to the selected air base unit. The list can be sorted by EXP, RDY, and TOT. Selecting TYPE brings up a aircraft type filter that allows the player to display all, none or specific types of aircraft in the reserve.

26.3.21. GROUND ELEMENT DETAIL WINDOW

This window can be accessed from all unit and city detail windows and provides detailed information on ground elements as follows:

Name: Ground element name and unit type graphic

Nation: Nationality

Type: Unit type

Men: Number of men in the ground element

Speed: Relative ability of the ground element to manoeuvre. Used in combat computations.

Size: Relative size of the ground element. Used in combat computations.

Load Cost: Used to determine rail, naval and air transport costs.

Fuel Use: Used to determine fuel usage for supply purposes.

Ammo Use: Used to determine ammo usage for supply purposes

Reliability: Used to determine if an AFV/Combat vehicle becomes damaged due to mechanical problems.

Build Cost: Amount of supplies required to produce the item.

Pool (Nation Abbreviation): Number of ground elements of this type currently in the applicable active production pool (26.3.3.3).

Front, Side, Top Armor: Relative amount of armor possessed by the ground element. This is one factor in determining the effectiveness of enemy fire during combat.

First Year: Year when the ground element entered or enters production.

First Month: Month when the ground element entered or enters production.

Last Year: Year when production of the ground element ended or will end.

Last Month: Month when production of the ground element ended or will end.

Graphic: Picture of the ground element.

Device information:

Device: Number and nomenclature of that type of device.

Face: Direction that the device faces when firing.

ROF and ACC: Modifier to a device's base rate of fire (ROF) and accuracy (ACC). ROF (Rate of Fire) and ACC (Accuracy) are modifiers. ROF is a negative modifier that is applied to vehicle mounted devices to reflect the restrictions of operating the device inside the vehicle. ACC is a positive modifier that increases the accuracy of the device to reflect both a more stable firing platform and superior optics. For example, from the game editor, the 75mm M3 gun has a ROF of 12. When mounted in a M4A3 Sherman medium tank, the modifier is set to - 3, resulting in an effective ROF of 9.

AMMO: Amount of ammunition carried internally by that device.

26.3.22. LEADER DETAIL WINDOW

This window is accessed by selecting the leader's name in the applicable headquarters unit detail window (26.3.17) and provides information on a leader's ratings, number of victories and defeats, command restrictions and the admin cost to replace the leader (11).

The Leader Detail window provides a picture of the leader and displays their rank, first and last name, HQ unit assigned, leader ratings, number of victories and defeats, command restrictions (None, Ground only, Air only, SS only), maximum command allowed (Corps/Army, Army Group, High Command), and dismissal cost in admin points, which links to Pick New Leader window (26.3.23).

26.3.23. PICK NEW LEADER WINDOW

This window is accessed from the leader detail window dismissal cost link (26.3.22) and allows the player to dismiss the current leader of a headquarters unit and select a new leader.

The window lists all leaders eligible to take command of the selected headquarters units. For each eligible leader, the window displays the admin cost to make the change, leadership ratings, number of victories and defeats, and, if applicable, the headquarters unit that the leader currently commands. The current leader's leadership ratings and number of victories and defeats is listed at the top of the window for comparison purposes. The sequence of letters corresponds to the following ratings:

P - Political, M - Morale, I - Initiative, A - Admin, M - Mech, I - Infantry, A - Air, N - Naval, V - Victories, D - Defeats.

Selecting a leader will place him in command of the headquarters unit and dismiss the current leader, who will be returned to the leader pool as an unassigned leader. If the new leader requires a promotion to assume command of the headquarters unit, there will be a 'P' next to the admin cost (11.4).

26.3.24. UNIT TABLE OF EQUIPMENT (TOE) WINDOW

The TOE window can be accessed from the unit detail window of all ground units. The left side of the window displays the name of the notional unit type (e.g. 43a Elite Panzer Division) and details the generic type (i.e. "medium tank" ground element) and number of ground elements required for that type of unit to be manned and equipped at 100 percent, to include the total number of men in a fully manned unit. The right side of the window displays the name of the actual unit (e.g. Hermann Goering Panzer Division), and details the actual number of ground elements by generic type in the unit. An additional column compares the actual number of each ground element to the TOE number as a percentage. For units that will upgrade to a different TOE, there is a "Show next TOE (OB) upgrade" link at the bottom right hand side of the window. Selecting that link will take the player to the "TOE Upgrade Window" (26.3.25). When viewing the TOE of a unit that has been broken down, the left side of the window will display one third of the parent unit rather than the entire parent unit.

V1.01.37 - 25 May 2016

Restricted OB upgrade if it is pointing to an invalid slot (ob type <1).

26.3.25. TOE UPGRADE WINDOW

This window is accessed from the TOE window (26.3.24) and uses a series of links to display all future TOE upgrades for that particular type of unit. The left side of the screen will show the current TOE (OB) for that unit, which includes the actual type (i.e. Panzer IVf) as well as number of ground elements (7.2) and total number of men in the unit. The right side of the screen will show the next TOE (OB) upgrade as well as the month and year the upgrade will commence. Links at the bottom right of the window can be selected to cycle back and forth through all future TOE upgrades in chronological order (Next TOE (OB) and Prev TOE (OB)), or switch to the TOE window. For example, in 1943, the TOE window for the German 16th Panzer Division will show the 43a

Panzer Div TOE. By selecting the "Show next TOE (OB) Upgrade link, the current 43a Panzer Div TOE (OB) will be displayed in the left side of the screen and the 43b Panzer Div TOE (OB) will be shown in the right hand with a TOE upgrade commencement date of October 1943 and the number of turns remaining before the upgrade. Selecting "Next TOE (OB)" consecutively will allow the player to view in sequence any 1944 and 1945 TOE Upgrades.

26.3.26. PICK NEW HQ WINDOW

This window can be accessed from the HHQ/OHQ links in the unit detail window of all eligible ground units to reassign ground units to a different headquarters unit. The window lists the eligible headquarters units that the unit can be reassigned and has four columns as follows:

RG: Range in hexes to the applicable headquarters unit.

HQ Unit: Name of the headquarters unit. Selecting the headquarters unit will immediately reassign the unit to that headquarters. There is no confirmation text box.

UNITS: Displays the current number of command points (CPs) of the units attached to the headquarters unit.

26.3.27. UNIT SUPPLY DETAIL WINDOW

This window which is accessible from the unit detail screen or the Commander's Report screen by selecting the unit name provides current info on the supplies/fuel/ammo/vehicles in the unit at the moment (in tons), and the current calculated "need" for each of these items. In the lower half of the screen, it lists out information about what the unit got during the previous logistics phase and where it got it from. The unit supply detail window has three sections as follows:

26.3.27.1.CURRENT STATUS

The top part of the screen first lists the supply priority for the unit (20.4.2) and then provides current supply and vehicle status by listing the amount and percentage in brackets of supplies, fuel, ammo, vehicles and support (if applicable) that are in the unit as compared to the amount required (need) to reach 100 percent of required supply and vehicles.

26.3.27.2. TURN SUPPLY DETAIL

This section lists each depot that sent freight to the unit with the following information:

Location of Depot: Usually name of port or city hex where the depot is located.

Range: The range in hexes to the depot.

MP: The number of movement points to the depot.

FrRec: The freight received in one ton increments.

VehRec: The number of vehicles received from the depot. These are vehicles that were delivering freight that were left with the unit.

A unit may receive goods from up to 5 depots.

26.3.27.3. RECEIVED DETAIL

This section provides details on the conversion of the freight received into supply, vehicles and replacements (20.1.3), the amount of supplies consumed, and information and events that occurred during the supply and replacement segment of the logistics phase that impacted the ability of the unit to be replenished.

Supplies, Fuel, Ammo: The amount of each item received (in tons) along with the percentage of need this represents.

Vehicles from Pool: The number of vehicles received from the motor pool (after being converted from freight) along with the percentage of need this represents.

Replacements: The net number of men received as replacements and the freight tonnage that was converted to replacements. This number can be negative if more men are returned to the pool than are received in replacements. **Supplies consumed:** The amount of supplies consumed. Note that consumption occurs prior to supplies being received, so the unit uses the supplies it had from the prior turn.

Admin failures: This is the number of admin rolls the unit failed during its attempts to get freight from the depot (20.5.1.2). Next to this in brackets is any penalty that is being applied to various leader checks due to HQ command range or HQ unit command capacity impacting the HQ units in the unit's chain of command (7.7).

No freight, No trucks, No fuel, No supply, No manpower: The first time a unit does not receive freight due to one of these reasons, a number is placed next to the item. The number is the supply sub-segment in which the lack of the item first occurred. For example, if in a sub-segment where the unit must have less than 30 percent of the needed item, the unit does not get anything because there was a lack of freight at available depots, then a 30 will be displayed next to 'no freight'. The no trucks message can also be received if the unit was trying to requisition vehicles but there were no trucks available in the pool to go to the unit. Note there is a chance that the no trucks message may be misleadingly given when vehicles are not required for a delivery as this process only checks to see if there are vehicles in the pool and not whether they were needed at the point of a failure to deliver.

26.3.28. CITY DETAIL WINDOW

This window can be accessed from the General Information and City box (5.1.5). The window normally displays the following information:

Name: Name of town, city or urban hex.

Nation: Nationality of town, city or urban hex

Player: Name of Player that currently controls the hex; Axis or W Allies

Population: Population in points, with each point equal to 50,000 people. This number does not change during a game, even if some of the manpower centers are destroyed. For non-city hexes containing an air base unit, the term 'Airfield' will be displayed.

Storage: Amount of Supply, Fuel, Oil and Resources currently stored in the town, city or urban hex

Factories: List of factory types in the town, city or urban hex in three columns as follows:

NUM – Number of that type of factory in the hex (factory points)

DAM – Percentage of damage currently sustained by that type of factory

Name of factory type, with '**' indicating a factory not yet in production

Priority (x): Link displayed if a depot is in the hex to allow the player to change the depot supply priority. Number in parentheses is the current depot supply priority.

Disband Depot: Link displayed if a depot is in the hex to allow the player to disband the depot.

Create Depot: Link displayed if there is no depot is in the hex to allow the player to create a depot at the cost of 1 admin point.

ASSIGN/FORM: Links to the Assign AA Unit window (26.3.16), which allows manual attachment of anti-aircraft support units to that town, city or urban hex or a hex with an existing air base unit.

UNITS ATTACHED: Lists air base units and anti-aircraft support units attached to that town, city or urban hex or a hex with an existing air base unit.

Build or Expand Air Base Unit: If no air base unit exists in the town, city or urban hex, a 'BUILD AIR BASE' link will display allowing a player to commence construction of a size 1 air base unit at the cost of 1 admin point. If there is an existing air base unit in the hex, an 'EXPAND AIR BASE(x)' link (number in parentheses being the current size of the air base unit) will display allowing the player to expand the air base unit to the next size at the cost of 1 admin point. If the existing air base unit is already at the maximum size three, a plain white text will display 'AIR BASE (3).'

26.3.29. PICK AIR UNITS FOR MISSION WINDOW

This window is accessed to manually select transport, level bomber, and escorting fighter/fighter bomber air groups for the execution of air transport missions (5.4.5). The main part of the window lists air group units eligible to fly the mission in six columns as follows:

RG: Range in hexes from the air base unit that the air group unit is attached to the target hex.

UNIT: Name of the air group unit. Selecting a name selects or de-selects an air group unit for the mission. Air group unit names shaded yellow have been selected for the mission; units shaded blue are not participating in the mission. The window will come up with some air group units pre-selected for the mission by the computer to meet air transport sortie requirements (5.4.5.2, 5.4.5.3).

TYPE: Model name for the specific aircraft contained in the air group unit, for example Albemarle.

CLASS: Classification of the functional type of aircraft in the air group unit, which will be either Transport, Level Bomber, Fighter, or Fighter Bombers.

READY: Number of ready aircraft in the air group unit

USED: Percentage of miles already flown that turn by the air group unit (17.1.1). Note that the air drop of airborne combat units mission can only be conducted by transport aircraft as their first and only mission in the turn.

The bottom of the window provides the following displays:

All Transport Missions:

Aircraft Totals: Running total of the number of aircraft currently selected for the mission broken down by fighter (FTR), bomber (BMR), and transport (TPT) aircraft.

LAUNCH: Selecting this button will result in the computer conducting the mission with the currently selected air group units.

ABORT: Selecting this button will close the pick air units for mission window without conducting the mission.

SELECT ALL: Selects all listed air group units to conduct the mission.

DESELECT ALL: De-selects all currently selected air group units.

Air Transport – Unit Missions:

Capacity: Number of tons of unit load the selected transports can carry.

Load Cost: Number of tons of unit load to be air transported.

Sorties Required: The minimum number of sorties that the selected air group units will need to conduct to transport or air drop the units.

Max Sorties: The maximum number of sorties the selected air group units can conduct and still transport or air drop the unit.

Note that the number of 'Max Sorties' must at least equal the number of 'Required Sorties' for the air group units selected to conduct the mission.

Transporting: The name of the unit being transported.

Air Transport – Freight Mission:

MULTIPLE MISSIONS: Toggles between multiple and single mission (5.4.5.1). If the Multiple Missions setting is selected, then the assigned air groups will fly repeated missions until they have exhausted their miles flown allowance or fallen below the percent required to fly.

Lift Tonnage: Number of tons of freight that can be carried by the selected air group units.

At the bottom of the screen will be listed the on-map units in the target hex with icons for supplies, ammo and fuel and the current amount of that item they have followed by the need for that item.

NOTE

Level Bomber air group units selected for the mission will cost one admin point per air group unit.

26.3.30. FIND HEX/CITY/UNIT/AIR GROUP UNIT WINDOW

This window can be accessed by using the hotkey (h). It consists of four parts as follows:

Find Hex/City/Unit/Airgroup: Variable header that changes based on selection made in the "Find what" section

Search Term Input Box: Interactive input box used to enter a hex coordinate to find a specific hex or a search string to locate a town, city, urban hex, ground unit, or air group unit. The search is not case sensitive. Left clicking in that section will bring up the appropriate input box.

Find What Section: Allows the player to select from four types of things to search for, which are a hex, a city (town, city, urban hex or air base unit location), a unit (on-map or off-map support units), or an air group unit.

Search Results and "Go to" Section: Displays the result of the search. A "Go to" button takes the player to the appropriate detail window of the city, unit or air group unit or to the specific hex location entered. If the search term entered resulted in more than one city, unit or air group unit, the "Find Next" button will display, allowing the player to cycle through all the possible choices.

26.3.31. METRICS SCREEN

The metrics screen provides turn based line graph charts of numerical data from Gary Grigsby's War in the West. Each chart will have turns on the x-axis and scaled data on the y-axis. Large numbers will have commas for easier viewing and numbers greater than six digits will be expressed with 'K' for thousands. Data lines and points will be displayed in blue for the Axis and in green for the Western Allies. The player has check boxes in the lower right hand of the screen to display or hide Axis info, Western Allies info, East Front info, or numerical data values on the chart. The player also has the ability to filter out the last 10 turns on the selected chart display. In addition there is also a check box to have the chart display the data in terms of the delta (change) between turns.

Metrics charts are divided into five categories that can be hidden by unchecking the box at the bottom of the screen. Only one chart can be selected at a time. The currently selected chart will be displayed in white text with an asterisk and the chart display title will list both the category and the actual data being displayed. All other charts will be links in pale blue text. The following are the metrics chart categories with remarks on some of the specific charts that may not be self-explanatory:

Victory Points (25):

Note that the VP metrics will reflect the scenario that is being played, whether campaign, non-campaign or air campaign (25).

ALLIED CITY: City Control Points (25.1.1)

CITY: Allied City Victory Points (25.1.1)

US LOST: US casualties in men (25.1.1)

OTHER LOST: All other Western Allies casualties in men (25.1.1)

OOB (5.1.2.2)

Air Execution (17):

The Air execution items are combined totals of the current turn's execution phases (only the Allied player will see both phases added together in the current turn, and only once they have completed their air execution phase).

SORTIES PER ONE LOSS: Aircraft losses on the ground are excluded from the totals when calculating sorties per one loss.

Production (26.3.3)

East Front (23)

26.3.32. AUTOMATIC AIR DIRECTIVE CREATION SCREEN

Unless disabled, the screen will appear at the start of the player turn after the losses screen has been closed or by using hotkey 'a'. The purpose of this screen is to allow a player to quickly give objectives to his air forces through selection of mission priorities, and then have the computer create a set of air directives that will attempt to carry out those objectives. From this screen, the player can view the air planning phase directive summary screen (26.3.33), or direct the computer manage air group units, set air directives and execute the air directives.

Section 5.3.1 provides details on the automatic air directive creation screen.

26.3.33. AIR DIRECTIVE SUMMARY SCREEN (AIR PLANNING)

This screen is used during the air planning phase to provide information on and allow editing of the current air directives that have been issued to Air HQ units. It can be accessed only during the air planning phase, either through the button in the info screens tab or the air planning mode toolbar or by using hotkey 'shift-d'.

The top of the screen has an icon that links to the metrics screen (26.3.31), a link to the Automatic Air Directive Creation Screen (5.3.1) and the total number of air directives currently issued to Air HQ units.

The main part of the screen lists information on air directives by Air HQ unit. Note that the last five columns (Raids, Sorties, Lost,

Damaged, and Enemy Lost/Dam) are not applicable for the air planning phase, but are used for the Air Execution Summary Screen (26.3.34) that displays after the air execution phase. There is also a section at the bottom for automatic naval patrols, but it will be blank as these types of missions do not fall under air directives (5.3.1). The following information is provided:

Air HQ: Each sub-section of the summary screen begins with the name of the air HQ unit, followed by (grey text) the name of the air HQ unit leader's name, his air and admin leader ratings, and the resulting maximum number of air directives the air HQ unit can be issued (8.4).

Type: Lists each air directive that has been issued to the air HQ unit by type. An [x] next to each air directive can be used to delete it. Note there is no confirmation text box. The air directive name can be selected to take the player to the applicable air HQ unit and air directive mode screen for viewing or editing (5.3).

Target: Lists the coordinates of the target hex of the air directive, with the exception of ground support air directives where the ground HQ unit being supported will be listed. For Strategic Bombing (Bomb City) air directives, the name of the city in the target hex will also be listed.

S Base: Lists the staging airfield for the air directive missions (5.3). Not applicable for ground support air directives.

Area: Lists the target area for the air directive (5.3), with the first number being the radius and the number in parentheses being the number of hexes in total that make up the target area. Note that this number may display zero if no air group units have been assigned to the mission yet. Not applicable for ground support air directives.

Alt: The cruising altitude for the air directive missions.

S Time: Lists whether the air directive missions will be conducted during Day or Night.

Intensity: Lists the intensity (Low, Medium, High), equating to the number of missions that will be attempted to be flown into the area (5.3.2).

Groups: Lists the number of air group units manually assigned to the air directive (5.3.4) or Auto for computer selection of air group units.

Weather: Lists the current weather condition (excellent, good, fair, poor, very poor) from the base to the target, with the number in parentheses below indicating the weather value, with the higher the value, the worse the weather (22.2.1).

V1.00.29 – 19 March 2015

Added the ability to set the air execution detail level for each air directive on the air directive summary screen. Each directive can be set to show either 'none' (no information during air execution) or 'all' (normal information based on air execution phase detail setting).

V1.01.01 – 30 September 2015

Changes made to the air game rules that are documented in the OnePageGuide 4b:
Added ability to active/deactivate air directives.

26.3.34. AIR EXECUTION PHASE SUMMARY SCREEN

The Air Directive Summary Screen (26.3.33) changes to the Air Execution Phase Summary screen once the air execution phase (4.1) has been completed and the turn enters the Move (action) phase. It can be accessed only during the move (action) phase, either through the button in the info screens tab or by using hotkey 'shift-d'.

The major difference is that the player can no longer view the details of the air directives and the results of the air execution phase are now populated on the screen.

The top of the screen has an icon that links to the metrics screen (26.3.31), the total number of air directives currently issued to Air HQ units, and the total number of sorties, which is every time an aircraft flies a mission, the number of friendly aircraft lost and damaged and the number of enemy aircraft lost and damaged.

The main part of the screen lists information on air directives by Air HQ unit. The first ten columns (Air HQ, Type, S Base, Target, Area, Alt, S Time, Intensity, Groups, Weather) is the same information that was listed in the Air Directive Summary Screen (26.3.33), but the air directive type is no longer linked and cannot be accessed or deleted. The results of the air execution phase for each air directive are now included in the last five columns with the following information:

Raids: Displays the total number of air missions flown during the air execution phase in support of the air directive. Selecting the number will close the screen, place the player into battle locator (F11) mode, and center the map area on the area where the air missions took place. Selecting the [+] link will expand the entry to display full details for missions that engaged in combat, bombed or reconnoitred a target broken down by the day the mission was flown. Due to the above for some types of missions, for example, air superiority directives, it will list total sorties for the directive much higher than what will be displayed in the expanded view of the various missions flown. The information provided will vary based on the air directive type, but in all cases will display icons for friendly (white) and enemy (red) fighter, bomber, and utility aircraft, the number of aircraft flying the mission in white and any losses below as a negative number in yellow. In all cases, the target type listed in the 'TYPE' column is linked and selecting it will close the air execution phase summary screen and take the player to the map area with battle locator (F11) mode enabled and the combat resolution report for that air mission opened.

The following is additional information provided for applicable air directives:

Strategic Bombing (BOMB CITY): Lists target type from target priority list (5.3.8), location (city and nation), actual factories that were bombed, and bombing damage inflicted by the air mission (+ damage %), but see 13.2 for Fog of War effects on damage estimates.

Ground Attack (GND ATTACK): Lists target type from target priority list (5.3.7), location (hex coordinates or city and nation), and damage based on ground attack target type as follows:

Airfield: Displays percentage damage before attack and additional damage percentage.

Unit: Displays icons for men, guns, and AFV with losses listed below in yellow negative numbers.

Railway: Displays increase in rail usage tonnage in the target hex.

Port: Displays percentage damage added by the bombing attack

Ferry: Lists number of air interdiction points added to the ferry hex.

Interdict: Lists number of air interdiction points added to the target hex.

Railyard: Displays percentage damage added by the bombing attack.

Air Superiority (SUPERIORITY): Lists air combats (target type is always AIR COMBAT) and the location (city or hex coordinate and nation).

Tactical Recon (RECON): Lists target type from tactical recon target priority list (5.3.9), location (hex coordinates or city and nation), and the number of recon points added to the target hex.

Strategic Recon (STRAT RECON): Lists target type from strategic recon target priority list (5.3.9) and location (city and nation).

Naval Patrol: For naval patrol air directives (5.3.11), lists NAVAL PATROL as target type, location (water hex coordinates) and number of naval interdiction points added to the target hex.

Sorties: The first number lists the total number of strike (bombing or recon) sorties flown for that air directive. The second number is the number of escorts that flew sorties in support of the strike aircraft.

Lost and Damaged: Number of friendly aircraft destroyed and number of friendly aircraft damaged during air missions. For both columns, the first number is for the main mission aircraft while the second number is for the escort aircraft. The first number could be bomber, fighter-bomber (if bombing), recon or fighter (in case of air superiority (AS). Since AS (air superiority) does not require escort, the second number should always be zero for AS air directives.

Enemy Lost/Damaged: The first number is the number of enemy aircraft destroyed and the second number after the slash is the number of enemy aircraft damaged.

NAVAL PATROLS: For all automatic naval patrols not covered under air directives, this lists only the number of sorties flown and the total number of aircraft lost.

26.3.35. AIR EXECUTION PHASE AND LOGISTICS PHASE PROGRESS WINDOW

This is a dual purpose window that provides information on the progress of the air execution phase and the logistics phase. It is a small window that appears in the right corner of the screen during the respective phases.

26.3.35.1 AIR EXECUTION PHASE PROGRESS

This window appears during the air execution phase and some information will remain available in the move phase until the exit link is selected or a information screen different than the air execution summary screen is opened and closed. A grey bar shows overall progress and the percentage completed will be displayed next to the Air Execution text at the top of the screen. It consists of three selectable tabs that provide information as follows:

Statistics Tab: Provides a running tally of number of sorties and aircraft losses for both sides with the side designated by the applicable flag banners. The total number of sorties is further broken down into those flown in support of air directives and those flown in support of automatic naval patrols. The total number of aircraft losses is further broken down into those caused by air combat, anti-aircraft (flak), losses on the ground, and operational losses.

Air Directive Tab: Provides a running commentary for each air directives as it is executed. For each day, it will first indicate that naval air patrols are being flown, then for each air directive it will list the air HQ unit, air directive type, number of strike, escort, and partial escort aircraft conducting the air directive, the number of raids (missions), sorties, and losses as wells the cruising altitude and speed of the aircraft executing the air directive. As each air directive is completed, that information will be erased and this part of the window will be blank after the air execution phase completes.

Messages Tab: Provides event details for each of the seven days and nights as the air execution phase progresses. Information includes status of each air directive air missions, including cancelled missions, results of training missions, arrival of replacement pilots, ammo and fuel usage, and aircraft repair in each day's air maintenance phase,

26.3.35.2. LOGISTICS PHASE PROGRESS

This window appears during the logistics phase and lists each segment of the logistics phase with completed segments annotated by the green text [done] and the segment currently in progress by the red text [running]. A grey bar shows overall progress and the percentage completed will be displayed next to the AI Logistics text at the top of the screen.

26.3.36. AXIS GARRISON STATUS SCREEN

This screen provides information on Axis garrison requirements (18.2.1) and status as well as the current level of partisan activity (18.3) and can be accessed from the button on the information screens tab or hotkey Shift-j. The following information is provided:

Area: Name of the garrison area. Note that the hex coordinates of the area are listed in the last column of the screen.

CV: Current Combat Value (CV) of eligible units in the garrison area.

Req: Required number of CV in the garrison area. Note that the garrison CV requirements will be set to zero when there is no requirement in the area (18.2.1).

Req%: Percentage of garrison CV requirement currently being met.

Next: mmm-yy: Lists change to required CV and the month and year it will occur. Will list none instead of month and year after May 1944. For example at the first turn in September 1943, the garrison requirement in Denmark will increase from 15 to 20 CV.

Units: Number of units contributing CV to the garrison requirement in the area.

City: The name of the city that has a garrison requirement and the current CV of units located in that city. If a security unit is in the city the CV number will be followed by a -S. If the garrison requirement changes so that only a security unit is required in the city, the name of the city will have a 'S' in parentheses next to it (18.2.1).

Partisan Activity: Lists the current partisan activity level for the area (18,3.1).

26.3.37. AIRBORNE PLANNING SCREEN

This screen provides information on the status of airborne combat units and air transport and preparations for air drop missions (17.3.9) and can be accessed from the button on the information screens tab or hotkey Ctrl-a. The screen is divided into a Northern Europe and a Mediterranean section and provides the following information:

Unit Name: Lists the name of available air drop capable combat units. Selecting the name will close the screen and take the player to the applicable combat unit detail window.

Transport Cost: The air transport load cost of the unit in tons.

Drop Hex: Lists the hex coordinates and nation of the air drop target hex. If no target hex has been set, it will list 0,0 and Not set.

Preparation: The number of preparation points the airborne unit has accumulated. Note that an airborne unit must have at least 50 preparation points to be eligible to air drop.

Combat Value: Current combat value (CV) of the airborne unit.

% TOE: Current TOE of the airborne unit (7.2.3).

Below the above table are the following:

Total Airborne Transport Cost: The total air transport cost in tons of the displayed airborne units.

Ready Transport Capability: The available total carry capacity in tons of ready air transport aircraft.

At the bottom of the screen are three check boxes to filter the available airborne combat unit. Default is all checked. The filters are Northern Europe, Mediterranean, and for airborne combat units that do not have a target (drop) hex set (not preparing). The total airborne transport cost will change as applicable with the use of the filters. Note that this information allows the player to calculate how many units can be dropped in one sortie, which is the requirement for air drop missions (17.3.9) For example, if in the 1943 scenario the player wants to check to ensure sufficient air transport is available to support the two units prepared to air drop in support of the invasion of Sicily, they would uncheck the 'Northern Europe' and 'Not Prepared' filters, reducing the airborne transport cost displayed from 3753 tons to 674 tons, well within the ready transport capacity of 1279 tons remaining in the Mediterranean.

26.3.38. EAST FRONT FORCES SCREEN

If the East Front option is enabled (23.1.2), this screen will provide the Axis player information on Forces assigned to the Eastern Front Forces and the overall status of the Front and Soviet offensive potential (23.2). The screen can be accessed can be accessed by only the Axis player in both the air planning and move (action) phase by selecting the mode toolbar East Front button (hotkey ctrl-e) (5.1.4).

The top of the screen has an icon that links to the metrics screen (26.3.31). The left side of the screen lists all Ground and Air units by type, to include HQ and support units, but not air base units. Ground units are listed first, to include Air HQ units, followed by air group units (Air Units). The following information is provided:

[W]: Link to withdraw unit from the Eastern Front and send it to arrive as reinforcement on the Western Front (national air reserve for air group units).

[F] or [R]: For all Ground units except HQ units, this is a toggle link to allow the change of unit status from front line [F] to refit [R] status. Ready units on the front line contribute their CV for combat purposes.

[X]: If a ground unit is depleted, this link will be displayed to allow unit to be disbanded if desired at no AP cost.

Combat Value (CV): The CV of the unit (23.3.1).

Mo: The current morale rating of the unit.

Unit name/designation: For ground units, includes both combat, HQ, and support units. Colored text for the names of units in the East Front box will signify special status and is similar to unit counter border color (5.2.2), with white for ready units ([F]), purple for refitting units([R] orange for unready units, and red for depleted units. Unready and depleted units will also be annotated with '(u)' after their name.

Ground units: Number of Men, Guns, and AFV's separated by dashes

Air Group Units: Aircraft model followed by number of ready, damaged and reserve aircraft

The right side of the screen displays overall status of the Eastern Front with the following information:

Total Combat Value: The combined CV of all units assigned to the East Front box modified by any HQ and divisional unit penalties (23.3.1).

Total Land Value: The combined CV of all ground units assigned to the East Front box modified by any HQ and divisional unit modifiers (23.3.1).

Front Conditions: Total Combat Value required for Stable, Fluid and Critical conditions on the Eastern Front (23.1.6).

Front Line: The current 'x' coordinate of the Soviet/Axis front line on the Eastern Front (23.3). The second number in parentheses is the historical 'x' coordinate used to determine any East Front Advance Axis penalty victory points (25.1.1)

Soviet Potential: The current amount of Soviet potential, which indicates the ability of Soviet forces to conduct offensive action (23.3.2).

Number of Divisions: The first number is the total number of divisions in the East Front box and the second number is the number of ready divisions that are not in refit. For example, 195: 193 indicates there are 195 total divisions in the EF box and 193 that are not refitting.

Divisions Required: The number of front line divisions required in the East Front box (23.3.1).

Number of HQs: The number of HQ units currently in the East Front box in the order Army Group: Army: Corps

HQs Required: The number of HQ units required in the East Front box in the order Army Group: Army: Corps

Total Strength: Total number of men, guns, and AFV on the Eastern Front.

Ready Aircraft Totals and CV Value: Total number of ready aircraft in the EF box listed by functional type and their calculated CV (23.3.1).

V1.01.37 – 25 May 2016

East Front Option - We are now dealing with German air groups when using the East Front option the same way we deal with ground units. Added code to remove the duplicate air groups at game start when the EF option is selected, and disabled withdrawals (leaving withdrawal choices to the players as it is for ground units). This should remove some duplicate German air units in games using the EF option.

26.4. APPENDIX D: STRATEGY AND TACTICS

Our thanks to Chris Munson for compiling the below strategy and tactics recommendations based on extensive knowledge and play testing of Gary Grigsby's War in the West.

26.4.1. AXIS STRATEGY

Overview: The German Army may be past its glory days in 1943 but remains formidable. The Germans have a number of well-equipped Panzer and Panzer Grenadier divisions in the west more than capable of holding their own against the Allies if left untroubled by Allied air power. Tactically, the Luftwaffe will be of little help to the Axis front line soldiers and Axis bomber strength should be conserved for critical situations. Stated simply, all Axis ground tactics in WitW are colored by the massive and seemingly ever present Allied air superiority. Allied air interdiction is particularly devastating to German movement and unit defense effectiveness. Regularly check interdiction levels and avoid movement through high interdiction (level 7-9) hexes which can cause significant disruption and casualties. Whatever strategies the Axis player chooses minimizing the effects of Allied air power should always be a consideration.

The Axis player should rigorously monitor garrison requirements every turn to keep from losing victory points. Most units' change their TOE at least once during the game and a region that had an adequate garrison one turn may find itself under garrisoned the next. Similarly, the opposite may occur and you may find you can now pull a unit out of a garrison zone. Finally, garrison requirements themselves can change.

The supply situation is considerably more nuanced in WitW than in WitE and no Axis player can prevail without active logistics management. Divisions can starve and air units not fly due to fuel shortages even though the resource pools indicate vast quantities. Consult the Commanders Reports and use the logistics information overlay (shortcut key {n}) frequently to check supply levels and distribution. If possible try to build depots within 3 hexes of major troop and airbase concentrations but certainly no more than ten hexes away. Remember to disband depots as early as possible before retreating as the loss of supplies and more importantly the depot's trucks is detrimental to a resource starved Germany.

Italy: Italy is a defender's dream. It is narrow so requires relatively few divisions to defend. It has lots of ideal defensive terrain and possesses numerous rivers parallel to the front. Unfortunately it also has lots of inviting coastline ripe for Allied invasion. The Axis player should always keep sufficient reserves to deal with this threat especially around Rome. The Axis player should endeavour to keep the Allies as far south as possible to avoid major attacks on their main defensive line before the mud turns hit in late 1943.

Sardinia and Corsica require some strategic consideration. They are large stationary Allied aircraft carriers if captured and their loss makes an Allied invasion of Southern France considerably easier. Realistically, the Axis cannot prevent their capture once Italy surrenders if the Allies are determined to take them. Corsica is easier to defend than Sardinia and some defense could be offered on one or both islands but be wary of having sizable forces marooned as German naval capacity to evacuate troops ala Crete or Dunkirk is limited.

France: The Axis player has one overriding goal in France, containing the eventual Allied invasion(s) for as long as possible. If invasions are contained long enough the Axis can run out the clock on the Allies ability to significantly penetrate into Germany. If

the Allies can be constrained to a narrow front their material and manpower superiority can be negated somewhat. Another benefit of keeping the Allied invasions bottled up they are denied air bases. Allied air dominance only occurs over the parts of the map their planes can reach. Many Allied fighters and fighter-bombers have short ranges and if denied bases in France the Axis player can tamper Allied air superiority. Fortunately for the Axis the excellent defensive terrain behind most invasion areas (with the notable exception of the Pas de Calais) aids in the containment of Allied invasions.

Prior to any invasion the Axis player has several strategic choices to make in France and these principally revolve around allocating defenders to likely invasion areas and positioning mobile reserves. Every port in Northern France and Belgium should be garrisoned with at least one infantry division and a fort unit to gain a 4 or 5 entrenchment level. Holding ports significantly reduces the Allies ability to maintain sustained offensive operations and ports should be denied the Allies for as long as possible. The Axis should, as they did historically, make considerable effort to strengthen defenses in the Pas de Calais to discourage an Allied invasion there. The Pas de Calais is 200 miles closer to Germany than Normandy and its terrain is conducive to an early Allied breakout. Holland should not be ignored as a possible invasion site. Generally, the more troops you commit to an invasion area the less likely the Allies will invade there. The farther west you can convince the Allies to invade the better. Mobile reserves should be strategically positioned close to two or more invasion areas and not a great distance to the rear as Allied airpower can significantly hamper the movement of reserves at least until the Allied bombers resume operations over Germany.

Home Front: The Germans cannot stop the Allied air onslaught over the home front but they can make it costly. For the Luftwaffe the issue isn't aircraft numbers but pilot quality. Try to conserve strength and maintain pilot quality as the German pool of trained pilots is small and if your fighter units are decimated early any subsequent efforts to deter the Allied air armada will be feeble. Furthermore, you will have no elite units to upgrade to the German jets when available. Keep some healthy percentage of units on training missions and rotate these. Use the large number of Flak units on the map as a low cost way to assist the Reich air defense. Don't ignore placing and utilizing the numerous Flak units the Germans receive as reinforcements. Endeavour to place these units in the likely flight paths to the Ruhr and other German industrial clusters. The goal should be to keep Allied losses significant enough and the Luftwaffe healthy enough that the bombers are never flying virtually unopposed in great numbers.

East Front: Don't ignore the East Front box as a focus here can turn a draw into a victory. To have something approximating a historical result you need to keep the historical level of forces on the East Front although enterprising players may temporarily send several divisions west during bad weather to counter Allied moves, especially in Italy in the fall of 1943. It is important to note that armor units count far more than other units so you do not want to strip the East Front of these high CV units. Swapping two panzer divisions from France for two SS Panzer divisions on the East Front though is generally a neutral exchange. The East Front has the bulk of the German mountain divisions so a player should mull moving some of these to mountain rich Italy and sending other infantry divisions east to compensate. Consider sending any spare Korps HQ's east especially if the East Front has a shortage (as shown by HQ's required) as this is a quick and easy way to boost overall combat values. To keep the East Front forces from hollowing out some portion of units on the East Front should always be in refit mode. The Axis player can put a larger number of units on refit during bad weather when the force needs drop as shown by the Fluid and Stable indicators. Units in refit mode do not count towards EF force levels so use appropriately.

Manpower and Resource Management: The Germans possess enough forces to effectively counter the Allies but only if those forces remain healthy. The Germans will lose a war of attrition every time so be cautious about attacking needlessly or committing to do or die defenses of strategically worthless territory. Keep close tabs on manpower and armament reserves and remember you share those reserves with the vast armies on the Eastern Front. If Allied bombing significantly damages a key factory or resource you can hurry repairs on the city screen.

26.4.2. ALLIED STRATEGY

Overview: The Allied player has many advantages. Plentiful equipment pools, adequate replacements and an overwhelming air force. Many Allied units though do not have high morale, perhaps not even as good as many of the German units they confront. Some players will be tempted to use these plentiful resources and adopt a Russian style battering strategy but be warned, the Allies can zero out their replacement pools with this strategy. A more winning strategy is using command of the air and sea to hit the Axis when and where you want. Consider using airborne troops; hopefully more successfully than historically, in Market Garden style operations. The foundation of any Allied strategy though is air power.

Veteran WitE players will find a completely revamped air game in WitW. The biggest difference is in interdiction. Through mastery of interdiction air missions the Allied player can dominate the battlefield. Interdiction in WitW is by hex, not unit. The Allied player defines the range of hexes (or even a single hex) to apply interdiction to. If the selected area is small enough every hex in the selected range may be targeted, weather and enemy interceptors permitting. Casualties and disruption effects are not immediate but come into play when Axis units either move (or retreat) through interdicted hexes or defend in an interdicted hex. Prior to invasions the bulk of the air force should be committed to interdiction of the invasion zone and at least five hexes to the rear. This prevents reinforcements from quickly moving to the invasion zone and punishes them as they do just as the allies did historically to the reserve panzer formations rushing to Normandy after D-Day. Ground support missions are helpful but achieving high interdiction levels (level 7-9) in a hex are the key to winning ground attacks. Unit bombing is not generally effective unless a large stack of non-entrenched units are caught in the open.

Make use of the plentiful American support units to fill out the three support slots available for every American division. Each division should have an armor, engineer and one other unit of the players choosing. The Allies are also rich in artillery support

units so the American and British Corps HQ's can be assigned a generous allotment. The Allies will need to decide whether to group their armor brigades and divisions into armored corps or even armies as the Germans did historically or follow the Allied doctrine of dispersing armor units across the entire front. A hybrid strategy likely tempting to many players will be to make Patton's 3rd Army into a "tank heavy" battering ram.

Plan invasions with care as failure means many months of delay and a probable loss of the game if the main invasion of northern France collapses. Heavily bomb the rail net several weeks prior in the region you intend to invade and perhaps some other areas too to throw the Axis off. The turn of the invasion the Allied heavy and medium bombers and every plane available need to focus on interdiction missions to create a killing field in the invasion zone. Again, the interdiction area should extend at least five hexes to the rear of the invasion beaches. The application of this interdiction doctrine will allow you to be aggressive in expanding your beachhead in the crucial first two turns after the invasion. Do not forget to park plenty of units immediately behind your invasion forces to come ashore on turns two and three.

Once engaged fully in both France and the Mediterranean the Allied player may feel he lacks enough units to maintain a long front and simultaneously mass for offensive operations. In some respects this is true. The Axis forces are well supplied with infantry divisions and supporting armor reserves and can match the Allies unit to unit from the North Sea to the Mediterranean. Don't despair, with Allied air superiority great odds are not needed to drive the Axis back or punch holes in their lines. Focus your airpower on one area at a time rather than dispersing it across the entire front.

The Allied player will need to develop a strategic bombing doctrine. Hitting everything all the time will deplete the air force and limit damage to the Axis war machine. Rest the air fleet periodically especially during bad weather. The consistent targeting of specific industries such as fuel, aircraft or tank production can produce notable results. Hitting all industries equally will not produce the desired result as there are simply too many targets for that strategy to work. If you are losing too many bombers to German fighters consider increasing the number of fighter escort squadrons and adjust escort percentages upward on the air doctrine screen.

The Allies have no worries when it comes to supply quantities. Rather the issue is having supplies where and when needed to feed the voracious fuel and ammo appetites of Allied units. The Axis will undoubtedly try to deny Allied invasion forces access to the ports so their capture is a priority. Don't ignore the importance of logistics in WitW as unit effectiveness can degrade quickly when supplies dwindle. Remember you can create up to two Mulberry Harbors to increase your supply throughput on the beaches. It is vitally important the advancing Allies create numerous depots to keep troops supplied. Remember to adjust down the priorities of depots in remote rear areas like Sicily or North Africa once the troops and planes have moved on. In order to reduce shipping losses, return Amphibious HQs to port for a turn when they are no longer required to keep open temporary ports. Once they return their transports, these units can move back to sea to provide additional gunfire and carrier escort support for the invasion forces along the coast.

The Mediterranean: The Allies should be able to conclude operations in Sicily in around five weeks in the 43 Campaign. They should then, if feasible, cross over to the toe of Italy and consider an invasion somewhere in southern Italy. Salerno and Taranto are two likely targets. If the invasions are launched quickly after the fall of Sicily the Axis will not have the strength to contest the invasions for long. This should force Italy out of the war. If the Germans have not reinforced Sardinia or Corsica some or all of these islands may convert to Allied control. If the Germans have control a quick invasion will need to be planned. The Germans will not be there in strength so two invasion points supported by paratroops on each island should suffice. The Allies need these islands for their numerous airfields which can cover Italy and southern France as well as provide a staging area for the 15th Air Force to bomb Austria and southern Germany.

Once the Allies advance in Italy to the first German line somewhere south of Rome a decision needs to be made. Should resources be allocated to punch through or should the Allies be content to spend the winter in their foxholes. The excellent defensive terrain denies the Allies easy success in a slog up the Italian peninsula and advances are usually expensive. End run sea invasions are possible but beware of creating a small beachhead far from the main body of your forces. The main armies must still breach an undoubtedly tough German defense to reach the landings and they will already be weakened by the detachment of forces for the sea invasion.

France: Due to constraints of logistics, shipping and troop numbers it is improbable the Allies can invade France before May of 1944. The decision where to invade must be made months before that as amphibious HQ's need to accumulate fifty preparation points. If an amphibious HQ has two divisions attached to it preparations are slower so the Allies should strip some of their amphibious HQ's early from the Mediterranean theatre and put in large English ports in order to accumulate sufficient preparation points for both units stacked with them by the summer of 1944. Paratroops need less time to prepare. The main invasion in France should at least match in force the Allies historical six infantry and three airborne divisions.

Choosing where to launch the main invasion of northern Europe is the most significant strategic decision the Allied player has to make in WitW. Where to invade though? The Pas de Calais is the obvious choice. It is close to England, near Allied air bases and well provided with good ports. Unfortunately it has too many ports. Ports are the most defensible coastal hexes in WitW and are capable of 4 or 5 level fortifications. As such, ports are nearly impossible to take from the sea if well defended. There are not more than two contiguous beach hexes without ports in the entire Pas de Calais. Any invasion then will be spread out with German port strong points interspersed in between. This combined with the reality that this region is will undoubtedly be the best defended portion of the Atlantic Wall make a successful invasion here far from a sure thing.

Le Havre is another possibility. The Seine River behind the coast provides an excellent defensive line though by which the Germans can thwart an Allied breakout. There is a shortage of airfields which limits the Allies to the beach airfields until a breakout is achieved. Its proximity to the Pas de Calais means those forces are very near and several infantry divisions can stroll

the few miles west to contain the beachhead. Le Havre is a good choice only if reconnaissance indicates it is not heavily defended.

Normandy has a nice wide coast uninterrupted by potential port strongpoints. It is likely to have a smaller number of defenders than Pas de Calais or Le Havre. Cherbourg is a size 5 port that will probably be isolated from German reinforcement soon after the invasion. Its primary drawback as an invasion site is the extensive hedgerows behind the invasion zone. To counter this, the Allies might consider a larger airborne drop than historical and sliding part of the invasion one or two hexes to the east of the Orne River. This bypasses much of the bocage country and the natural defensive barrier of the Orne River.

Brittany is far from the Rhine but it is probable it will be sparsely defended compared to the other coastal zones and Brest is a level six port. There is some good defensive terrain inland but the Germans will likely have a hard time containing an invasion here as it is likely far from the main body of reserves located farther to the east. Fewer Allied planes will be in range to cover any landings but again, German force levels here likely will require less of a need for overwhelming airpower. Brittany makes sense if the Allied player feels he can make up for the distance from the Rhine by a speedy, less impeded drive east.

No matter which invasion zone chosen a quick breakout is the key to penetrating far enough east to win the game. Do not be hesitant to switch your bomber formations off strategic bombing to interdiction missions as needed. There is no strategic reason not to invade southern France as soon as possible after your main landing in northern France. The Germans will be hard pressed to contain both invasions. An invasion of southern France also opens up the possibility of entering northern Italy from the west and avoiding a slog all the way up the Italian peninsula. Once the breakout occurs keep the Germans off balance and harry them with interdiction missions so they are withdrawing through a storm of fire. As the war progresses it is unlikely any German fighters will be seen over France or Italy. Consider switching your fighter bombers to the bomber role to increase interdiction and ground support sortie numbers.

26.5. APPENDIX E: DEVELOPER NOTES

By Joel Billings (2by3 Games)

When Gary Grigsby's War in the East was completed in late 2010, we turned our attention to the Western Front. We naively thought that we could quickly move the systems developed for WitE to the West and, with a few changes for amphibious invasions and port logistics, be done. We thought perhaps it would take two years. There were a few things we didn't count on. First, WitE required a lot of post release support. We spent months fixing bugs and improving game systems and balance after players pushed the game system. Much of this ended up immediately improving WitW, or in other cases, showed us areas that we could improve on.

Two issues quickly identified were the need to improve and expand the air war part of the game and the need to add more realism and detail to the logistics system. The Eastern Front was primarily an air war focused on providing air support for the ground troops. For WitW, the air war needed to be expanded to provide for the massive strategic bombing campaign, as well as the enhanced roles of interdiction of both ground and rail movement and interdiction of the sea lanes. Players of WitE had also found ways to game the simplified air system, leading to the use of house rules to prevent the various spam air attack methods that had been developed. We also wanted to add in the use of fixed airbases on the map instead of the abstract system of mobile air HQs.

Early on, we agreed to add a separate air execution phase to handle most of the air war. Pavel Zagzin took on the task of bringing this system to life. It turned out to be a very big task, one that continued to grow as Pavel added new features and refined the interface. It was Pavel's idea to introduce the concept of Air Directives assigned by the air HQs that would be used to generate the various missions flown during the turn. We realize having a separate resolution phase before the ground movement phase is an unusual design choice. However, this hybrid of the classic IGOUGO system gave us a chance to provide an air game more like some of Gary's previous games (although much more streamlined with the AD concept), while retaining the IGOUGO structure for the ground game that we felt worked well in WitE.

The logistics system was the other big area of change from WitE. In 2000, when WitE development began, a system that tracked every freight point that moved down a rail was put in place. Unfortunately, we found the system ran much too slowly. Even in 2008 when we returned to WitE development, the thought of having a system that limited movement down rails was too much for the computers of the day. By 2011 when WitW work began in earnest, we felt it was more important to deal with this issue, especially as we now had to deal with the limited port capacity of ports and the need to capture ports to supply Allied forces on the continent. Although things are a little slower than we'd like, Gary was able to develop a system that tracked and limited movement of units and freight over rails and between ports. While this system was being developed, we got a lot of feedback and suggestions for improvement from John Young. His constant questioning of the system along with suggestions for how to provide information to the players pushed us to further refine the system. No doubt it will continue to be refined in future games in this series, but we believe it gives us the right tools to work with. Luckily for us, and customers looking for this extra detail and realism, computers get faster every year. I began to feel that Pavel and Gary had succeeded when I recently read this in Rich Atkinson's *The Guns At Last Light* and compared it to what I was seeing in the game: "Anglo-American warplanes harried the battlefield to a depth of 150 kilometers or more; day marches in fair weather were suicidal. Rail traffic could get no closer to the beached than 200 kilometers. Air attacks now immobilized nearly three hundred trains a day."

As expected, a lot of work had to go into devising the amphibious system. We decided fairly early on that for this game we wanted to abstract most of the naval issues as Allied naval superiority was almost a given from the first turn of the game. We did find that the addition of the rules allowing amphibious HQs to block enemy sea movement and supplies was necessary to allow the Allies to use this naval superiority at times when their air superiority was not enough to shut down various Axis ports. The

Allies have a lot of tools in the game, what with their amphibious and airborne capabilities. This means there are plenty of opportunities for the Allied player to think outside the box. Of course, much of this rests on gaining air superiority in an area, so there are limits to Allied power.

All of this proved a challenge for Gary's work on the artificial intelligence. Getting the Germans to defend well was doable, although having to defend in Italy, where there's always the possibility of an Allied invasion in the rear, was a challenge. Dealing with multiple beachheads and front lines is not something that comes naturally to the AI, although it seems to be able to do that now. Having the Allied AI choose between different options was another story entirely, and one that led Gary to press reset and go back to the drawing board on several occasions. The AI will not think out of the box like a human player, but it will give you some different strategies to play against.

Another challenge was getting the map done. We knew we wanted to create a full map of Europe and North Africa that we could use for a series of War in Europe games. The War in the East map was a painted map, which allows for a great look, but is harder create and adjust. The question became, could we do a tiled map (map made up of individual hex and hexside tiles) that would look as good as a painted map. If we could get close, then we'd gain the ability to more easily make the map come alive with colored rail lines, and better weather graphics. We'd also more quickly get a working version of the map up and running, not only for the WitW area, but also the full War in Europe area. After much discussion and some initial test coding by Pavel, we decided to take the plunge and go for a tiled map. Jason Petho provided the initial set of raw data for the map. After getting some basic tiles done, Pavel was able to hook up a working map and provide the editing tools to allow the artists to add tiles and position them on the map. Jeremy Simmons came on in 2013 and under the direction of Richard Evans has made the final map come to life. A big plus came when Pavel created a map text editor and John Young put it to good use to provide living text. As you zoom, the textual information changes, allowing John to add a lot of additional text not possible in the WitE painted map. Although we have only finalized the WitW portion of the map, we now have a working War in Europe map we can use going forward.

The weather system also deserves a mention here. Pavel spent several months in late 2012 designing a weather system that would go much beyond what we have ever seen in one of our games. With the inclusion of both air and ground weather, as well as weather fronts that actually move across the map and interact with climate zones, we've moved closer to the complexity of the real world. While testing I've enjoyed watching warm fronts move up from Africa bringing dry weather to Italy, and monster blizzards from the east bring snow to Central Europe. We made a conscious choice to have the weather change during the Western Allied logistics phase as the Allies always had better information about how the weather was changing, and this allows the Allies to know what the weather will be during the complete turn while the German player won't know what the weather will be during the next Allied turn. I can't think of any game of this scale that has come close to this level of detail regarding the weather.

As with War in the East, Jim Wirth's OB research was the foundation supporting many of the game's systems, and Trey Marshall and John Young designed the scenarios. Supporting these three were a host of others, most notably Dennis Schulz's work on the aircraft database, Brad Hunter's help with OBs, and Axel Heicke's work on photographs. I'd also like to acknowledge Allan Berke's work on the Game Manual, and John Young's work on the Player's Handbook and Editor Manual. To all these individuals, the many other contributors and testers on the project, Erik Rutins, and the entire Matrix Games team, we are tremendously grateful.

So what's next? We've been talking about using the basic systems in WitW to allow us to work on products covering Poland 1939 and France 1940, with a possible connection between the two of them. Other ideas are to work on scenarios in North Africa from late 42-43, and also from 1940-42. And of course we're very interested in working on a War in the East 2.0. We hope that the foundation laid in WitE and now WitW will make these possible. Hopefully, at least some of these will take less time than WitW did.

26.6. APPENDIX F: EISENHOWER'S CRUSADERS: THE ALLIED ARMIES IN GARY GRIGSBY'S WAR IN THE WEST

By James Wirth

With special thanks to Bradley L. Hunter

In writing of his experience as the supreme Allied commander in the European Theatre of Operations (ETO), General Dwight D. Eisenhower chose the title, CRUSADE IN EUROPE. Like the medieval crusaders drawn from all over Europe to fight in the Holy Land, Eisenhower saw the Allied armies drawn from all over the world as modern day crusaders liberating Europe from Nazi domination. Today, almost seventy years later, the Allied victory in Europe seems a foregone conclusion. The nearly inconceivable American war production combined with the millions of Allied soldiers would imply that Hitler's defeat was inevitable, but wars are not won by numbers; they are won by soldiers and more importantly, by organized soldiers. The thousands of tanks, tens of thousands of artillery pieces and millions of soldiers fielded by the Allied nations would have been utterly useless had they not been formed into combat effective battalions, regiments, brigades and divisions. To fully understand the Allies' triumph it is not enough to know the statistics of the campaign or the individual stories of heroism and sacrifice, you must know the armies as well. The following is a description of how those armies were organized to fight and win what we call the War in the West.

26.6.1. THE AMERICAN ARMY

The time between the outbreak of the Second World War on September 1, 1939 and America's entry into that war on December 7, 1941 had given the United States Army a unique opportunity to study the tactics and organizations of friends and foes alike under actual combat conditions. The initial success of the Wehrmacht heavily influenced the development of American combat formations and their tactical doctrine. The German example was also tempered by the experiences of British and Soviet forces in combat against the Germans. The result was an American army that was reasonably well-balanced and organizationally sound. This is not to say that the United States Army didn't have flaws, it did, but these flaws were largely beyond its organization and that it persevered despite these flaws is a tribute to that organization.

The Heavy Armored Division

In 1940 the Army began to form its first three armored divisions. As conceived these divisions were stronger than even the German panzer divisions of 1939 with nearly 350 light and medium tanks organized in two regiments of three battalions each. In addition there was an armored infantry regiment of three battalions, an armored artillery regiment of three battalions, an armored reconnaissance battalion, and an armored engineer battalion plus headquarters and various other support elements. Total personnel strength of the heavy armored division was nearly 15,000 men.

The U.S. Army had been impressed with the success of the combined-arms teams (kampfgruppen) the German panzer divisions were formed into for combat and institutionalized this idea in the Combat Command concept. The heavy armored division's regiments were divided into two combat commands, A (CCA) and B (CCB). Each combat command could contain an armored regiment, one or two armored infantry battalions and one or two armored artillery battalions. The remaining divisional assets were controlled by the headquarters of the armored infantry regiment; there was no reserve command (CCR) in the heavy armored divisions. In late 1943 the heavy armored division re-organized its armored regiments and upgraded its equipment. The result was a small reduction in light tank strength (from 125 to 119) and the replacement of the obsolete White Scout Car and T30 75mm HMC (howitzer motor carriage) with the M8 Armored Car, the M8 75mm HMC and the still under development M4(105) Sherman. The M7 105mm HMC could be substituted for the M4(105) until the latter became available in early 1944. No further organizational changes were made to American armored divisions for the remainder of the War.

The Light Armored Division

In response to the reduction in tank strength of the panzer division as a result of Hitler's doubling the number of panzer divisions for the invasion of Russia, the U.S. Army formed all armored divisions subsequent to the first three as "light" armored divisions with only three tank battalions. In mid-1944 the 1st Armored Division was re-organized as a light armored division leaving only the 2nd and 3rd Armored Divisions as heavy divisions. Under the late 1943 re-organization the light armored divisions contained just over 200 light and medium tanks and a complement of about 11,000 men. In addition to CCA and CCB the light armored division also had a small staff that served as the headquarters for the reserve command (CCR). In theory the combat commands provided "kampfgruppe-like" mission flexibility but in practice were more rigid in structure.

The most glaring omissions in the organizations of both types of armored divisions were the absence of "organic" anti-tank and anti-aircraft battalions. These omissions were the result of an organizational philosophy that shaped the entire structure of the American army. That philosophy held that a division should not permanently contain any element it didn't always need. Since an anti-tank battalion would only be needed when an enemy armor threat was present and an anti-aircraft battalion needed when air superiority was lacking Army doctrine required that these assets remain in a general reserve so as to not burden the division with their maintenance when unessential. In practice this "lean division" philosophy was largely ignored and tank destroyer and anti-aircraft battalions were attached to every armored division almost continuously when in action. One unique feature of all American armored divisions is that with the exception of the Jeep mounted scouts in the reconnaissance battalion all the combat elements were comprised of tracked or half-tracked vehicles increasing the division's cross-country capability. Only the German Panzer Lehr Division came close to this level of mechanization.

The Infantry Division

The American infantry division mirrored the German infantry division of 1939 with a triangular structure of three infantry regiments each consisting of three infantry battalions. Each regiment also contained an anti-tank company of 57mm guns and a cannon company of 105mm light howitzers which often augmented the divisional artillery. That artillery consisted of three battalions of 105mm howitzers and one battalion of 155mm howitzers. There was also a divisional combat engineer battalion and a small reconnaissance troop plus the usual headquarters and support personnel for roster strength of between 14,000 and 15,000 men. It is a popular misconception that American infantry divisions were fully motorized; they were not. While the heavy weapons, headquarters and other support personnel were motorized, the infantrymen themselves lacked organic transport. Truck companies controlled at Army level provided the necessary transport for those occasions when a division had to move long distances.

In keeping with the lean division concept explained above no heavier anti-tank or anti-aircraft assets were organic to the division. In the ETO tank (preferably) and/or tank destroyer battalions and an anti-aircraft battalion were usually attached rendering the lean concept little more than theory. These attachments substantially increased the firepower of the infantry division and were essential to its success in battle. From the landing in Sicily to the end of the War the infantry division's TOE was never altered and was used by the 1st Division of the Brazilian Expeditionary Force as well.

The Mountain Division

For combat in the mountains of Italy the United States fielded one mountain division. The mountain division used mules instead of

trucks to move most of its heavy equipment and supplies and even its reconnaissance troop rode on horseback instead of in jeeps; only the mountain division's small anti-tank battalion of two 57mm anti-tank gun companies was motorized. The three mountain infantry regiments were supported by a mountain engineer battalion and three battalions of mule drawn 75mm howitzers. Although lighter in weaponry than a regular infantry division the mountain division was actually larger with personnel strength of nearly 15,000 men; the additional manpower was needed to support the division in such difficult terrain. The American mountain division was essentially a light infantry division; by contrast, the German mountain division of 1944 had nearly as much firepower as a 1944 German infantry division including an organic armor component. While the American mountain division was optimized for mountain warfare, its German counterpart had evolved over the years of war into a regular combat division capable of fighting in any terrain.

The Airborne Division

The American airborne division had the most fluid structure of any division fielded by the U.S. Army in WWII. Theoretically its TOE consisted of two parachute infantry regiments and a glider infantry regiment plus an engineer battalion, anti-aircraft battalion (actually equipped with anti-tank guns) and four battalions of 75mm Pack Howitzers. In practice airborne divisions had one and sometimes two additional parachute infantry regiments attached to them. As a result an airborne division could vary in strength from as small as about 9,000 men to as large as almost 14,000. Regardless of what was attached to the airborne division at any moment in time the basic character of the division remained that of lightly armed infantry with limited mobility until linked up with conventional ground forces. The "strategic" mobility that air assault gave the airborne division magnified its combat value far beyond the actual firepower of its weapons. In essence the airborne division was itself a weapon.

26.6.11. SELECT NON-DIVISIONAL COMBAT FORMATIONS

The Special Service Force Brigade

The 1st Special Service Force, popularly known as the "Devil's Brigade" was an elite Canadian-American unit that fought in the Aleutians, Italy and Southern France before being disbanded. Although in general more lightly equipped than even a conventional infantry regiment the brigade did contain a platoon of 75mm T30 HMCs and each "regiment" of the brigade held 18 flamethrowers, a weapon not even standard in combat engineer battalions. The brigade had mountain training and is depicted as a mountain infantry unit in the game given the nature of its deployments but it also had parachute jump training.

The Ranger Force Regiment

The 6615th Ranger Force consisted of three Ranger battalions (collectively known as "Darby's Rangers"), and a parachute infantry battalion with a company of combat engineers, a cannon company and a chemical mortar battalion as support. The Rangers were special assault infantry, the American equivalent of British Commandos. Although both mountain and parachute jump trained, the Rangers were primarily used in support of amphibious operations and therefore are represented in the game as an elite infantry unit.

The Regimental Combat Team

Not to be confused with the separate infantry regiments which were identical to the infantry regiments in divisions, the 442nd Regimental Combat Team was an infantry regiment augmented with an organic battalion of 105mm howitzers to give the unit greater offensive capability. The 442nd was comprised of Japanese-American soldiers bent on proving their loyalty to America. In the course of the Italian Campaign the 442nd became the most decorated regiment in the history of the United States Army.

The Cavalry Group

The cavalry group was a uniquely American unit consisting of two cavalry squadrons under a small headquarters unit. The cavalry group contained 34 light tanks, 66 M8 armored cars, 12 M8 75mm HMCs and 18 scout sections giving it an impressive amount of firepower for a unit of just over 1,500 men. The group's outstanding mobility allowed it to perform a range of operations such as deep reconnaissance, screening flanks and covering retrograde movements. What it couldn't do as demonstrated in the Losheim Gap at the beginning of the Battle of the Bulge was hold ground. With almost no infantry the cavalry group could not engage in the kind of sustained combat necessary for defensive actions. Despite its limitations, the cavalry group fought throughout the campaign in Europe and today the modern armored cavalry regiment can trace its heritage to it.

Tank and Tank Destroyer Battalions

The independent tank and tank destroyer battalions are notable if for nothing else than their sheer numbers; dozens of these battalions were fielded by the United States in World War II. Enough tank battalions existed to provide almost one for every infantry division in the ETO. Composed of 53 medium tanks, 17 light tanks, 6 close support tanks and 3 half-tracked mortar carriers the tank battalion provided the American infantry division with some of the offensive punch its bare bones organization lacked.

Vacillation within the Army as to the proper role of tank destroyers resulted in the towed tank destroyer (anti-tank gun) battalion remaining in service to the end of the War despite its continued diminishing utility. Nowhere was this fact more apparent than in the Battle of the Bulge when towed tank destroyer battalions suffered disproportionate losses due to their lack of mobility. Although the self-propelled tank destroyer (M10s, M18s & M36s) battalions fared better in battle than their towed brethren, they struggled to find a suitable combat role. Too thinly armored to function safely as a tank and only marginally effective to function as artillery, in an army almost continually on the offensive the defensively oriented tank destroyer never quite lived up to the pre-war expectations for it.

26.6.2. THE FREE FRENCH ARMY

In 1943 it became the responsibility of the United States to train and equip the new French Army. As a consequence, French units followed American tables of organization and equipment with a few exceptions noted below.

The Armored Division

The French armored division, known as Division Blindée in French, was organized like an American light armored division except for the inclusion of organic tank destroyer and anti-aircraft battalions. These inclusions probably reflected both a French disregard for the lean division concept and the uncertainty of French units having such battalions available as non-divisional assets.

The Motorized Division

The 1st Free French Motorized Division (1er Division Française Libre) was organized along the lines of an American infantry division but fully motorized and reinforced with an organic anti-aircraft battalion and a cavalry reconnaissance squadron.

The Infantry Division

The Free French infantry division was identical to its American counterpart except for including an anti-aircraft battalion and a cavalry reconnaissance squadron as in the motorized division.

The Mountain Division

At over 20,000 men the Free French mountain division was considerably larger than the American mountain division thanks largely to including a fourth rifle company in each of its mountain rifle battalions plus the anti-aircraft battalion and cavalry reconnaissance squadron as in the other French infantry formations.

The Alpine Division

The 27th Alpine Division (27e Division Alpine) was a "metropolitan" (formed in France) mountain division notable for being outfitted with French equipment including pre-war H-39 tanks. Although equivalent in size to the all-American equipped mountain division above, the division was not as well balanced in its weaponry and the H-39 tanks in particular were of questionable value in late 1944.

26.6.3. THE BRITISH ARMY

The British Army had been in almost continuous combat with Axis forces since April, 1940. In over three years of active operations its combat formations had been re-organized and its battle doctrine refined. Although there had been an almost constant influx of new units from across the Empire and the expatriate armies of occupied Europe, the British army of July, 1943 was a veteran force compared to its still green American cousin. The term "British" is used here to describe all ground forces organized and equipped along the lines of the British Commonwealth forces which includes in addition to Great Britain itself the forces of Canada, India, New Zealand, South Africa and the government-in-exile forces of Belgium, Czechoslovakia, Greece, the Netherlands and Poland as well as Italian forces who joined the Allies after the surrender of Italy. Where particular nations' forces differ substantially from the British standard they will be identified by nationality.

The Armoured Division

The standard British armoured division consisted of an armoured brigade and a truck-mounted (Lorried) infantry brigade supported by an armored reconnaissance battalion, a light anti-aircraft regiment, an anti-tank battalion, two artillery regiments, one of which was self-propelled, plus engineers and the usual headquarters and support personnel for an average strength of around 15,000 men. Within this "standard" there was a great deal of variation in the type and numbers of equipment and armoured divisions serving in Italy were authorized an additional infantry brigade. The result was that almost no two armoured divisions were the same. A British armoured division serving in Northwestern Europe was roughly comparable in size and strength to an American heavy armored division and arguably better equipped. For an army that needed to substitute firepower for manpower whenever possible the British armoured division fit the bill nicely.

The Mixed Division

The mixed division was an experimental formation used by the British for the Torch landings in late '42 in which one of the infantry brigades was replaced with a tank brigade. The British found this organization unwieldy and converted their divisions back to the standard three infantry brigade configuration but the 2nd New Zealand Division retained the mixed division TOE. Although it was fully motorized with nearly as many tanks as the armoured divisions serving in Italy, the 2nd New Zealand never received the "Armoured" designation. In early 1945 the 2nd New Zealand re-organized to form a third infantry brigade (still retaining the tank brigade) making it the strongest Allied "infantry" division in Europe at the end of the War.

The Infantry Division

Varying between 17,000 and 19,000 men the British infantry division was considerably larger than its American and German counterparts and with good reason. In addition to three infantry brigades with four infantry companies in each of their battalions the division contained a reconnaissance battalion, an anti-tank regiment, an anti-aircraft regiment and three field artillery regiments plus a battalion of engineers and the usual headquarters and support personnel. British engineers were not "combat" engineers but rather specialists in construction and other field engineering tasks. In 1944 a platoon of combat engineers, called "pioneers" by the British, was added to each infantry company helping to swell the division to over 18,500 men. This total represented the peak in strength for the infantry division. Responding to a manpower shortage that affected the Commonwealth in general and Britain in particular, the infantry division was downsized in late 1944 with the deletion of one infantry company

from each battalion. Even with these reductions the division was still formidable mustering just over 17,000 men.

The Airborne Division

At the time of the Sicilian campaign the British 1st Airborne Division consisted of three parachute brigades and an airlanding (glider borne) brigade. The 2nd Parachute Brigade was detached to form the 2nd Parachute Brigade Group and henceforth the organization of the airborne division was two parachute brigades and an airlanding brigade. For Operation Overlord the 6th Airborne Division's armored reconnaissance squadron was upgraded to an armored reconnaissance regiment including a squadron of Tetrarch light tanks delivered by the large Hamilcar glider. While of questionable value the light tank complement proved effective enough to be retained for the Operation Varsity landing in 1945, albeit this time with American M22 Locust light tanks in place of the rather elderly Tetrarchs. Like the American airborne division, the British airborne division was designed for limited duration combat against disorganized resistance. As aptly demonstrated in Market-Garden it was too lightly armed to fight independently against conventional ground forces for very long.

The Air-Portable Division

The Germans had pioneered the concept of the airlanding division which was basically a light infantry division flown in on transports to airfields seized the airborne forces. Although the German experience with airlanding troops was a mixed one, the British thought enough of the concept to convert their 52nd division from a mountain division to an airlanding division (called air-portable by the British) in the spring of 1944. One curious legacy of this conversion was the retention of a squadron of Valentine tanks in the reconnaissance battalion. The Valentines and other heavy weapons of the division were intended to re-join the air mobile elements after they linked up with the ground forces. The 52nd's planned employment in Market-Garden was scrubbed and the division was committed as a ground division shortly thereafter.

The Mountain Division

The only Commonwealth mountain divisions to see combat in the ETO were those of India. The Indian mountain division was virtually identical to the infantry division except for its mountain training. Not being "lightened" like the American mountain division, the Indian mountain division was suitable for combat in any terrain.

26.6.3.1. SELECT NON-DIVISIONAL COMBAT FORMATIONS

The Tank Brigade

British tank brigades were designed to support infantry divisions and not surprisingly they were outfitted primarily with infantry tanks which were generally slower and more heavily armored than other British tanks. These tank brigades were "pure" tank units without any organic infantry or artillery and therefore not capable of operating independently. (Player's Note – For administrative ease in War in the West these tank brigades are "multi-role" units but historical purists should only use these brigades as attachments or HQ combat support units.)

The Armoured Brigade and Armoured Brigade Group

Like tank brigades British armoured brigades were initially pure tank units but generally composed of cruiser tanks rather than infantry tanks. Cruiser tanks were the opposite of infantry tanks in that they sacrificed armor for speed. Armoured brigades formed the tank component of British armoured divisions but in combat often operated separate of the rest of the division with disastrous results. The armoured brigades that were still independent in late 1943 were now generally equipped with American Sherman tanks making them capable of supporting infantry in the same manner as tank brigades and even one armoured brigade was starting to be re-equipped with Churchill infantry tanks towards the end of the War. The armoured brigade group was a tacit admission of the failure of armoured brigade to operate independently without infantry and artillery support. To the basic armoured brigade a battalion of motorized (later mechanized) infantry was added along with anti-tank guns and self-propelled artillery. While not as well "balanced" as an American combat command or a tailored German kampfguppe, the armoured brigade group nevertheless had more overall mission capability than the pure tank armored brigade.

The Assault Engineer Brigade

Despite its misleading title, the assault engineer brigade was a pure tank formation that came in two flavors. The 1st Assault Engineer Brigade was composed almost entirely of Churchill AVRE assault engineer tanks with a few regular Churchills and some un-armed engineering AFVs for support. The 25th Assault Engineer Brigade was a conglomerate of Churchill AVREs, Churchill Crocodiles, Sherman Crabs, Sherman Dozers, with Shermans, Churchills, Humber armored cars and a variety of un-armed engineering AFVs in support. Collectively these two brigades composed many of the vehicles the British called the "funnies".

The Special Service/Commando Brigade

This brigade was a composite force of British Army and Royal Marine commandos. The 1st and 4th Brigades contained only commandos and infantry support weapons; the 2nd Brigade was reinforced with a battery of captured Italian 47mm anti-tank guns, a battery of 75mm pack howitzers, 12 additional Vickers machine guns and 18 additional 3in mortars giving it greater sustained combat capability. In late 1944 the brigades were renamed Commando but otherwise unchanged.

26.6.4. ARTILLERY, THE ALLIES'

"WONDER WEAPON"

No examination of the Allied armies in the ETO could be complete without a discussion of Allied artillery. Most accounts of the campaigns in the ETO stress the omnipresent effect of Allied airpower and deservedly so. Allied airpower disrupted German supply lines, indicted troop movements and provided often timely close air support but airpower in World War II had its limitations. Planes

could not fly in bad weather, their effectiveness at night was marginal at best and terrain severely restricted their ability to target the enemy. The Germans quickly learned to take advantage of these limitations and operate in ways to reduce the effectiveness of Allied air superiority. While airpower remained the strongest card in the Allies' hand, the Germans could occasionally finesse it, not so with Allied artillery.

Artillery was the Allied ground forces most formidable weapon. Commonwealth forces based their divisional artillery on the redoubtable 25 Pounder Gun-Howitzer. While lighter calibre than its American and German 105mm counterparts, the 25 Pounder outranged those howitzers and was accurate enough to be a somewhat credible anti-tank weapon as well. British doctrine did not allocate any heavier artillery at division level preferring to reserve those weapons for non-divisional field artillery regiments. The most common field artillery regiment was the medium regiment with 16 4.5in field guns. Heavy regiments were equipped with a combination of 12 7.2in howitzers and 4 5.5in field guns while super heavy regiments contained either 8 British 8in howitzers or, in 1945, a combination of 4 American 240mm howitzers and 4 American 8in field guns.

As noted above, American infantry division artillery was three quarters medium howitzers and one quarter heavy howitzers while the armored division artillery was entirely composed of M7 105mm Howitzer Motor Carriages. For non-divisional artillery support the Americans relied on their field artillery battalions. These battalions ranged calibre from 105mm to 240mm; all except the 8in gun and 240mm howitzer battalions consisted of 12 weapons, the latter two of only 6. By far the single most common field artillery battalion was the 155mm howitzer battalion with nearly ninety of them in the American order of battle.

It was not however merely the number of artillery tubes that made Allied artillery so powerful but rather the scale at which that artillery was supplied and the coordination with which it was employed. Despite a supply line stretching thousands of miles across the Atlantic to the United States, Allied artillery was almost ALWAYS better supplied than German artillery, even when fighting on the frontiers of the Reich. The Allied logistics "miracle" was an unsung but decisive factor in winning the War. To put those mountains of shells to their greatest effect the Allies had developed an unparalleled artillery communications network. Any Allied forward observer (FO) with a functioning radio or field telephone could call down massive artillery fires in a matter of minutes. Observers flying in light observation planes could spot targets in the German rear not visible to ground FOs. The Americans enhanced this level of coordination with a technique developed pre-war called "Time On Target" or TOT which had all the artillery involved in a given fire mission delivering their initial shells simultaneously. Since most casualties from an artillery barrage occurred in the first few seconds of the barrage before the troops had time to go to cover, a properly executed TOT barrage could be devastating. If there was anything the German soldier feared more than the dreaded "Jabos" (fighter bombers) it was American artillery.

For all the glamour of air operations, the adrenaline rush of fast-moving tank columns, or even the undeniable heroics of individual soldiers, World War II in Europe was, like its predecessor, a war of big guns. Artillery inflicted most of the casualties while sustaining the fewest losses of any of the combat arms. The many German "wonder weapons" like the King Tiger tank, the Me-262 jet fighter and the V-1 & V-2 rockets might fire the post-war imagination but on the battlefield they ranged from marginal to meaningless. It was Allied artillery, conventional in design but innovative in execution, that was the true decisive weapon in the ETO. American and British artillery would blast the path that Eisenhower's "crusaders" would follow to victory in the War in the West.

26.7. APPENDIX G: SIGNIFICANT TABLES

Below are included some of the tables from the manual that the player may find useful to consult during play. Each table includes the reference in the main manual.

26.7.1. SOFT FACTOR SUMMARY [5.1.3]

SOFT FACTOR SUMMARY		COLOR CODE				
Symbol	Soft Factor	Bright Green	Dark Green	Yellow	Orange	Red
	Experience	>85%	71-85%	56-70%	41-55%	<41%
	Supplies	>85%	71-85%	56-70%	41-55%	<41%
	Fuel	>85%	71-85%	56-70%	41-55%	<41%
	Ammo	>85%	71-85%	56-70%	41-55%	<41%
	Supply Priority	4	3	2	1	0
	Morale	>85%	71-85%	56-70%	41-55%	<41%
	Number of Support Units attached to a Combat Unit	0	N/A	1	2	3
	Number of Support Units attached to a HQ Unit	0	1-6	7-12	13-18	19+
	No Soft Factor Selected	N/A	N/A	N/A	N/A	N/A

26.7.2. COMBAT UNIT COMMAND POINTS (7.7.2.1)

COMBAT UNIT SIZE	
Brigade/Regiment	1
Fortified Zone	1
Division	2

26.7.3. HQ UNIT COMMAND CAPACITY (7.7.2.2)

The following table displays the command capacities for different types of headquarters units:

COMMAND CAPACITY	DATE	
	7/43-3/44	4/44-9/45
HQ Unit Type		
Corps (Type 4)	10 CP	11 CP
Army (Type 3)	30 CP	33 CP
Army Group (Type 2)	120 CP/90 CP (1)	132 CP/99 CP (1)
High Command (Type 1)	900	900
OKW, OB West, SHAEF, AFHQ (Type 1)	~ CP (1)	~ CP (1)

Notes

(1) German Army Groups have the higher of the two capacities while Allied Army groups have the lower capacity.

(2) High Command HQ units have infinite command capacity (they will never be considered overloaded). This is shown on screen as a command limit of 999.

26.7.4. HQ UNIT COMMAND RANGE (7.7.4)

TYPE OF HEADQUARTERS UNIT	COMMAND RANGE IN HEXES	COMMAND MODIFIER (11.3.2)
High Command (Type 1)	90	Divide Range by 4
Army Group (Type 2)	45	Divide Range by 3
Army (Type 3)	15	Divide Range by 2
Corps (Type 4)	5	Divide Range by 1
Air (Any Type)	90	(1)

Note

(1) Use the command modifier for the type of HQ unit involved, however, for purposes of Leader checks, any check of an air command HQ leader will treat the range to the HQ unit as 0 if it is less than 91 hexes to the HQ.

26.7.5. AIR BASE UNIT SUPPORT CAPACITY (8.3.5)

	MAINTENANCE POINTS		
	Level 1 ABU	Level 2 ABU	Level 3 ABU
Number of Engines			
1	1	1	1
2	2	1	1
3	3	1	1
4	4	2	1

Air base units can effectively support a certain number of maintenance point's worth of aircraft dependent on their size as follows:

Size 1: 90

Size 2: 180

Size 3: 270

26.7.6. COMMAND OPTIMUM RANK (11.4.3.4)

The Optimum rank for each command is summarized in the below table. An exception is that for air HQ units, the rank required to command the HQ is one lower than that of other HQs.

HQ UNIT TYPE	WA OPTIMUM RANK	AXIS OPTIMUM RANK
Corps (Type 4)	MGEN	GENL
Army (Type 3)	LGEN	GEN
Army Group (Type 2)	FGEN	GENO
High Command (Type 1)	AGEN	FM

26.7.7. ADMINISTRATIVE POINT COST SUMMARY (12.2)

ACTION	ADMIN POINT COST	REMARKS
Disband Unit	1	Section 10.3 (1)
Create Supply Depot	1	Section 20
Build Size 1 Air Base Unit	1	Section 8.3.2
Expanding Air Base Unit	1	Section 8.3.2
Priority Repair	1	Section 21.2.1
Assign a Level Bomber air group unit to air transport mission (Single or Multiple Missions)	1	Section 5.4.5
Reactivate Static Unit	Varies	Section 10.2.2
Temporary Motorization	Varies	Section 14.1.3
Change leader of a HQ unit	Varies	Section 11.4.3
Create Fortified Zone Unit	4/1 (2)	19.1.2
Transfer AA Battalion from City to High Command HQ	3	7.4.1
Transfer AA Regiment from City to High Command HQ	10	7.4.1
Transfer LW AA Battalion from City to High Command HQ	15	7.4.1
Transfer LW AA Regiment from City to High Command HQ	50	7.4.1
Transfer eligible AA unit from one city to another	1	7.4.1 (3)
Transfer eligible AA unit from HQ unit to a city	1	7.4.1
Move a non-motorized Division from the East Front Box	2	Section 23.1.3
Move a motorized Division from the East Front Box	3	Section 23.1.3
Move a Corps HQ from the East Front Box	3	23.1.3
Move an Army Group/Army HQ from the East Front Box	2	23.1.3
Move a Brigade or Regimental size non-motorized unit from the East Front Box	1	Section 23.1.3
Move a Brigade or Regimental size motorized unit from the East Front Box	2	Section 23.1.3
Move an air group unit from the East Front Box	1	Section 23.1.3
Move a support unit from the East Front Box	1	23.1.3
Move any unit to the East Front Box	1	23.1.3

Notes

(1) Exception – there is no admin cost to disband depleted units in the east front box (23.3).

(2) The AP cost for the Axis player building in an Italian nationality hex that is not adjacent to a non-lake water hex is 1 AP.

(3) RR Flak units can move between cities at no AP cost. Static AA units, to include German Flak Towers cannot be moved.

26.7.8. TACTICAL MOVEMENT POINT COST CHART (14.1)

V1.00.21 – 18 February 2015

Units moving in desert hexes, and clear terrain hexes in Africa south and west of hex 124,319 (the coast road), are not charged MPs for moving into an enemy controlled hex unless the hex has a fort level. Any enemy fort construction in the hex will cause the moving unit to pay the normal cost of moving into an enemy controlled hex.

TERRAIN COSTS	MOTORIZED MP	NON-MOTORIZED MP
Clear	1	1
City	1	1
Light Urban	1	1
Heavy Urban	1	1
Bocage	1	1
Light Woods	2	1
Heavy Woods	4	2
Rough	3	2
Desert	2	2
Sand	8	4
Tundra	3	2
Swamp (Ice level 4 or less)	6	2
Swamp (Ice level greater than 4)	4	2
Mountain (Mountain Infantry units pay 3 MPs)	40	10
Mountain Pass (Enter by and use rail hexes only)	4	4
Lake hex	Impassable	Impassable
Ferry (Note 4)	12	6
Costs for Attacking	Motorized MP	Non-Motorized MP
Hasty Attack	+3	+2 (7)
Deliberate Attack	+16	+6 (7)
Attack across an unfrozen minor river (in addition to applicable attack cost) (2)	+2/3 of EZOC MP Cost (3)	+2/3 of EZOC MP Cost (3)
Attack across an unfrozen major river(in addition to applicable attack cost) (2)	+2/3 of EZOC MP Cost(3)	+2/3 of EZOC MP Cost(3)
Combat Delay MP Cost (14.1.5)	+3/Delay Point	+1/Delay Point
Impact of Weather (Game Editor Generic Data)	Motorized MP (Road Condition Good/Ave/Poor)	Non-Motorized MP (Road Condition Good/Ave/Poor)
Light Mud	+1/+1/+1	-/+1/+1
Heavy Mud	+2/+4/+6	+1/+2/+3
Light Snow	-/+1/+1	-/+1/+1
Snow	+2/+2/+2	+1/+1/+1
Heavy Snow	+2/+3/+3	+2/+2/+2
Minor and Major River Hexside Movement (2)	Motorized MP	Non-Motorized MP
Minor River Ice lvl 0-2 (No EZOC)	+2	+1
Minor River Ice lvl 0-2 (EZOC)	+6	+2
Minor River Ice Lvl 3-4 (No EZOC)	+3	+2
Minor River Ice Lvl 3-4 (EZOC)	+7	+3
Minor River Ice Lvl 5-10 (No EZOC) (Frozen) (2)	+0	+0

Minor River Ice Lvl 5-10 (No EZOC) (Frozen) (2)	+1	+0
Major River Ice Lvl 0-2 (No EZOC)	+4	+2
Major River Ice Lvl 0-2 (EZOC)	+18	+5
Major River Ice Lvl 3-4 (No EZOC)	+6	+4
Major River Ice Lvl 3-4 (EZOC)	+22	+9
Major River Ice Lvl 5-7 (No EZOC)	+8	+6
Major River Ice Lvl 7-7 (EZOC)	+26	+13
Major River Ice Lvl 8-10 (No EZOC) (Frozen)	+1	+0
Major River Ice Lvl 8-10 (EZOC) (Frozen)	+4	+1
Impassable River/Lake hex side (1)	Impassable except when frozen (2) (6)	Impassable except when frozen (2) (6)
Full water hexes (2)	Impassable	Impassable
Impassable hex	Impassable except see (6)	Impassable except see (6)
Costs for enemy hexes and EZOC	Motorized MP	Non-Motorized MP
Leave enemy ZOC	+1	+1
Enter enemy hex	+((120-unit morale)/20)) (round down)	+((120-unit morale)/20)) (round down, subtract one from cost for cavalry units)
Enter enemy ZOC (only if already in enemy ZOC, i.e. ZOC to ZOC) (4)	+4 + same cost as for entering an enemy hex (This is in addition to the entering enemy hex charge that may also apply if entering a enemy hex)	+4 + same cost as for entering an enemy hex (This is in addition to the entering enemy hex charge that may also apply if entering a enemy hex)
Brigade/Regimental and Divisional Breakdown units entering enemy hex and when moving ZOC to ZOC	+1 in addition to normal costs	+1 in addition to normal costs
Temporary and Western Allies Motorized Infantry Units entering enemy hex	+1 in addition to normal costs	N/A
Air Interdiction per hex (17.3.3.1)	Motorized MP	Non-Motorized MP
1	-	-
2	+1	-
3	+1	-
4	+1	-
5	+2	-
6	+2	+1
7	+2	+1
8	+3 (8)	+1
9	+3 (8)	+1

Notes

(1) Supply may be traced through hex side when frozen (Ice level 8-10).

(2) Major and Minor Rivers as well as impassable River/Lake hexsides have much less effect on movement and no effect on combat when they are frozen. These hexsides are frozen when the ice level is 5 or greater for minor river hexsides and when the ice level is 8 or greater for Major River and impassable hexsides. There is never any ice in full water hexes (small lakes, large lakes, Baltic, Mediterranean, etc.) and they will never be frozen.

(3) The extra MP cost of attacking across a river is equal to 2/3 of the MP cost (truncated) for moving across a river (based on ice levels) into an EZOC. For example, a motorized unit pays 17 extra points when attacking over a major river when ice levels are 5-7, $26 \times \frac{2}{3} = 17$.

(4) Example: A ZOC to ZOC move by a Morale 83 unit moving to clear terrain is 7 if not entering an enemy hex (1 for clear + 1 for leaving a ZOC + 5 for moving ZOC to ZOC) If the unit was a cavalry unit it would be 6.

(5) Special Ferry Rules – Ferry Movement is allowed between two friendly hexes via a ferry hex, or from a friendly hex to an empty enemy controlled hex if there is a friendly amphibious HQ in the ferry hex. In this case the MP cost of the ferry is 12 for

motorized and 6 for non-motorized units. The only time a unit may attack from a ferry hex is if the ferry hex contains a friendly amphibious HQ. In this case ground units may move from adjacent land hexes and stop on top of the amphibious HQ and attack an adjacent enemy land hex. Units that fail an attack from a ferry hex will retreat back to a land hex. Players may only move over ferry hexes that they control unless moving over an amphibious HQ.

(6) Impassable hexes outside of Africa can be crossed if both sides are friendly controlled, paying the same cost as if crossing a major river hexside.

(7) Non-motorized type 2 units pay only 5 MPs for a deliberate attack and 2 MP for a hasty attack (7.9).

(8) There is a +2 MP cap on the movement penalty per hex caused by air interdiction to motorized units moving in clear terrain.

V1.00.29 – 19 March 2015

Changes to Garrison rules:

When Allied units are in two garrison zones and the Axis garrison requirement goes away, it will never return, even if the Allies are no longer in two zones.

26.7.9. RAIL LINE HEX USAGE SMP PENALTIES (14.2.4)

If the map information tab logistics info button (hotkey n) is toggled on, rail hexes are color coded based on tons of rail usage. Below are rail usage ranges with associated color codes and strategic movement point penalties per hex.

- Bright green: 0 tons usage – No usage and no SMP penalty
- Dark Green: 1 – 4999 tons – No SMP penalty
- Yellow: 5000 – 9999 tons – +1 SMP penalty
- Yellow: 10000 – 14999 tons – +2 SMP penalty
- Orange: 15000 – 19999 tons – +3 SMP penalty
- Orange: 20000 – 24999 tons – +4 SMP penalty
- Orange: 25000 – 29999 tons – +5 SMP penalty
- Red: 30000+ tons – +6 SMP penalty

26.7.10. TERRAIN FORTIFICATION DEFENSE MODIFIER SUMMARY (15.3.1)

TERRAIN TYPE	DEFENSE MODIFIER	REMARKS
Clear	+0	
Bocage	+2	Dense (1)
Desert	+0	
Sand	+0	
Tundra	+0	
City	+2	
Light Urban	+6	+3 if Isolated Hex Double Dense (2)
Heavy Urban	+8	+4 if Isolated Hex Double Dense (2)
Light Woods	+1	
Heavy Woods	+2	Dense (1)
Rough	+3	Dense (1)
Mountain	+3	Double Dense (2)(3)
Swamp	+2	Dense (1)
Impassable	N/A	

Notes

(1) In dense terrain, the CV of infantry type ground elements is doubled and the CV of AFV and combat vehicle type ground elements is halved (15.6.2.3).

(2) In double dense terrain the CV of infantry type ground elements is quadrupled (x4) and the CV of AFV and combat vehicle type ground elements is quartered (x1/4) (15.6.2.3).

(3) Mountain and type 0 non-motorized combat units are more effective during battles that take place in a mountain hex (15.6.2.3).

26.7.11. WEATHER COMBAT VALUE MODIFIER SUMMARY (15.6.2.4)

The following table shows the weather CV modifier from the Editor Generic Data.

Weather in Attacking Units Hex	WEATHER ATTACK CV ADJUSTMENT		
	Good Road System	Average Road System	Poor Road System
Light Mud	.90	.80	.75
Heavy Mud	.50	.25	.125
Light Snow	-	-	-
Snow (1)	.90	.80	.75
Heavy Snow (1)	.90	.80	.75

Note

(1) Ski units will have their combat value (CV) doubled in snow hexes and tripled in heavy snow hexes and are not affected by the above weather CV modifiers for snow and heavy snow.

26.7.12. INLAND PORT HEX CONTROL (16.2.1)

Inland ports require a player to have control of all of the land hexes along the river and/or ferry hexes between the sea and the port (for unit and supply movement to/from the port). The list of inland ports and hexes needed for ownership:

INLAND PORTS											
Name	Port Hex	Closest water/port hex	Hexes that must be owned								
Bordeaux	73,228	73,226	72,227	73,227							
Nantes	71,208	68,207	69,207	69,208	69,209	70,208	70,209				
Manchester	75,158	72,158	71,159 73,160	72,159 74,160	73,159 72,158	74,159 74,158	72,160	73,160	74,160	72,158	74,158
London	82,176	83,177	84,176	83,176	83,177	82,177					
Rochefort	72,218	73,219	73,218	72,219							
Antwerp	100,181	98,179	97,178 98,180	98,178 99,180	99,178 100,180	99,179 99,181	97,180	98,180	99,180	100,180	99,181
Rotterdam	101,175	99,175	100,175	100,176	101,176						
Amsterdam	103,172	101,171	102,171	102,172							
Stettin	143,164	143,159	143,160	144,160	143,161						
Luebeck	127,161	128,159	128,160	129,160	128,161						
Hamburg	124,163	121,161	122,161	123,162	124,162	122,163	123,163				
Bremen	120,167	118,163	118,164 119,166	119,164 120,166	118,165 118,167	119,165 119,167	118,166	119,166	120,166	118,167	119,167

26.7.13. AIR INTERDICTION DAYLIGHT HOURS MODIFIER SUMMARY (17.3.3.1)

Interdiction values generated by airstrikes are modified by a certain percentage due to the number of hours of daylight based on the month as follows:

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
% Modifier	-20	-10	0	+10	+20	+30	+20	+10	0	-10	-20	-30

26.7.14. AXIS REGIONAL AND CITY GARRISON REQUIREMENTS (18.2.1)

The region garrison requirements change over time and are set forth in the following table:

REGION	JUN 1943	SEP 43	MAR 44	MAY 44	AFTER INVASION OF	BOUNDARIES OF REGION
--------	----------	--------	--------	--------	-------------------	----------------------

					NORTHERN EUROPE	
Denmark (1)	15	20	20	20	10	Denmark
Netherlands	25	20	15	15	10	Netherlands
Belgium	35	25	25	25	10	Belgium
NE France (2)	60	60	75	100	40	French and Y<215 and x>85
NW France (2)	100	100	120	130	50	French and Y<215 and X<86
SW France (2)	40	40	40	40	15	French and Y>214 and x<86
SE France (2)	45	45	45	45	30	French and Y>214 and X>85
N Italy (2)	0	40	40	35	25	Italy and Y<244
Total Required	360	385	395	425	190	

Notes

(1) Denmark will not suffer any partisan attacks, but VP will still be lost if garrison requirements are not met.

(2) Regions in France and Italy are delineated by orange lines on the map.

Cities that must be garrisoned are listed below along with the date that the garrison need for the city begins. By May 1944, there are 9 cities that require a 10CV garrison and at least one of the units must be a security unit.

CITY GARRISON REGION	JUNE 1943	SEPTEMBER 1943	MARCH 1944	MAY 1944
Belgium	Brussels	Brussels	Brussels	Brussels
NE France	Amiens	Amiens	Amiens	Amiens Dreux
NW France	Rennes	Rennes	Rennes	Rennes Tours
SW France	Bordeaux	Bordeaux	Bordeaux Toulouse	Bordeaux Toulouse
SE France	Avignon	Avignon	Avignon	Avignon
N Italy	Bologna	Bologna	Bologna	Bologna

26.7.15. PARTISAN ACTIVITY LEVEL (18.3.1)

The Partisan activity level (PAV) in each area is calculated by adding 10 to the following values:

- +30 for failure to meet an area garrison requirement
- +2 for each CV point short of the garrison requirement in an area
- 1 for each 2 CV points over the garrison requirement in an area
- +20 for each garrison city without a security unit
- +10 for each CV point short of the 10 required in a garrison city

26.7.16. FACTORY REPAIR RATE SUMMARY (21.2.3)

TYPE OF FACTORY	REPAIR RATE PER TURN
Oil, Resource	1%
Heavy Industry, Synthetic Fuel, Fuel	2%
Armament, Vehicle, Manpower, Aircraft and AFV/Combat Vehicle, Port, Railyard	3%
V-Weapon Sites	5%

There is an adjustment to the repair percentage based on the size (number of points) of the factory as follows:

- (1) If factory size is 1-3, multiply basic repair rate x3
- (2) If factory size is 4-6, multiply basic repair rate x2

26.7.17. AIR WEATHER CONDITIONS (22.2)

There are six Air Weather Conditions as follows:

AIR WEATHER CONDITION	REMARKS
Clear	

Rain	Light Rains/Summer Rains, Additional cloud cover
Heavy Rain	More overcast and rain, Very Bad Air Mission Weather
Cold	Light Snow, Clear sky much of the time
Snowfall	More regular Snowfall with more Cloud Cover, Bad Air Mission Weather
Blizzards	Snow storms and very low temperature. Very Bad Air Mission Weather

27. CREDITS

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DEDICATION

I'd like to dedicate all my work on this game to my father, Valerij Zagzin, who inspired me to love games, coding and life. – Pavel Zagzin

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28. ADDENDUM

V1.01.37 – 25 May 2016

- **New Features and Rule Changes**

1. Added a new Living Manual that contains New Features and Rule Changes since the initial release of the game.

2. Added Optional City VP item to the Options screen. This impacts campaign games if toggled on. When on, the victory screen lists that the Allies start with -1200 city victory points due to this option. However, they can earn up to 1600 city victory points in total if they occupy the cities listed in the victory screen. When the cities are captured by the Allies, the points for the city are added to the total Optional City VP total, and this amount is also reflected in the Campaign column of the City Points. For example, at the start of the 1945 campaign, Paris (worth 400 points) and Antwerp (worth 200 points) are occupied by the Allies. Thus, the Optional City Points is equal to -600 (-1200+400+200), and this amount is reflected in the City Points Campaign score. The intention of this rule is to provide additional rewards for the Axis player to accept casualties and advance into Germany. While we recommend this game option for all games, we strongly suggest that this game option be turned on when not playing with the East Front Option. This prevents the Allies from accepting a Soviet takeover of Germany, while striving to maximize bombing points and minimize casualties. This was not politically acceptable to the Allies.
3. Display Change - Adjusted unit names on counters. Removed suffixes - st,nd,rd.
4. Display Change - Unit name is shown on counter of enemy units with detection 5 or greater.
5. Display Change – Added new elements to the battle report to provide more information regarding fort destruction
 - a. Added combat intensity (CI) value (when relevant) to the battle report (small infantry symbol with number). If CI is over 15 and engineer value is >0 or if over 30, then it is relevant (per clarified fort level reduction rules below).
 - b. Added artillery fort reduction value to the battle report (small artillery symbol with number). This indicates the number of fort points reduced due to artillery fire (each point is 2% of a fort level).
 - c. Engineer value in battle report is the number of fort points destroyed by engineers (combined pre and post-odds destruction per clarified rules).
6. Improved map current hex cursor (should be better aligned with hex).
7. Formula Adjustment - Slightly reduced night air combat intensity.
8. East Front Option - We are now dealing with German air groups when using the East Front option the same way we deal with ground units. Added code to remove the duplicate air groups at game start when the EF option is selected, and disabled withdrawals (leaving withdrawal choices to the players as it is for ground units). This should remove some duplicate German air units in games using the EF option.
9. East Front Option - Made tweaks to East Front combat, offsetting the impact of other changes, to improve East Front balance.
10. Restricted OB upgrade if it is pointing to an invalid slot (ob type <1).
11. Editor - Added ability to mark/unmark units.
12. Manual correction/clarification – Forts can be reduced during combat in these ways:
 - a) From artillery fire during fire combat, with heavy artillery weapons causing the greatest reduction. These reductions are generally small fractional reductions.
 - b) If the attack was not halted, the full engineer value is applied prior to the odds calculation and may reduce the fort levels.
 - c) Once the final combat odds and intensity level of the combat is calculated (defined by the unit size of the attacking force where a division equals 9 points), forts may be destroyed if;
 - i. Odds are ≥ 1.5 or combat intensity is > 30 - automatic 50 point fort reduction (one full fort level reduction) and possibility of additional fort reduction based on the engineer value similar to part b) above but with the AE value divided by 2.
 - ii. Odds are ≥ 1 and < 1.5 or combat intensity is higher than 15 - 1/4 of engineer value attempts to reduce forts as in b) above.
 - d) Minesweeper and MSW Tanks count as two engineer squads for purposes of determining the engineering value.
 - e) This sentence in the original manual is void: In addition, if the attacking force is unable to force a

retreat on the defender, but has a combat value ratio between 1:1 and 1:1.99, there is a chance that the defending fort level will be reduced up to one additional level, with fractional reductions once again possible.

V1.01.31 – 9 April 2016

- **New Features and Rule Changes**

1. Interface change - Changed the way map zoom works. It will zoom around a mouse cursor position, not around current hex.
2. Interface change - Made the HQ unit selected when going to HQ from right panel.
3. Interface change - Lower level air HQs (ex. Fliegerkorps) will be listed after their parent air HQs (LF) in air transfer mode (F10).
4. Rule Change - Allow regimental size non-support units to attach 1 support unit.
5. Rule Change - Added an extra delay for overrun air groups. They are put back to the national reserve in 3 turns (was immediate).
6. Rule Change - Withdrawing units are now set to supply priority 4 and this is not adjustable by the player. This is the one case where a combat unit can have a supply priority different from its HQ. This is necessary to allow the unit to build up to the 75% strength required for withdrawal.
7. Rule Change - Air Superiority AD's now always execute before Naval Patrol flights.
8. Changes to Naval Interdiction missions:
 - a. Reduced efficiency of non-naval air groups for NI
 - b. Reduced efficiency of GP bombs for NI
 - c. Increased efficiency of mines/torpedoes/ASW weapons for NI
 - d. Improved automatic naval load out selection
 - e. Made it easier to reach lower NI and harder higher NI values
9. Changes to air game:
 - a. Increased high altitude fatigue gain.
 - b. Reduced flight altitude evade on very high altitudes.
 - c. Adjusted air flight altitude impact on air combat.
 - d. Adjusted flak code.
10. Fixes and improvements for the air navigation panel. (Mouse clicking should be faster in F10 mode).
11. Rule clarification - Units in the East Front box require less vehicles to carry supplies/fuel/ammo. Rebuilding units in the editor with a delay of 2000 (units starting in the EF box) will reflect this and will have a lower vehicle need.
12. Editor – Now allows the TOE OB upgrade to be set to 0.
13. Editor – Added a few elements of data to several of the CSV files.
14. Editor - Added ability to rebuild air bases based on aircraft located at the base.

V1.01.20 – 1 February 2016

- **New Features and Rule Changes**

1. Hooked Show Air Directive Target toggle functionality (and button on top menu) to show NO AD targets/All AD targets/Only active ADs.
2. Added HQ unit dispersion factor, which is reducing amount of squads and attached units can be targeted and HQ's flak fire ability. Dispersion factor depends on the level of HQ and gets doubled up when it is within 5 hexes of an enemy ground unit.
3. Added freight level for national supply source depot type. This is the amount of freight that the national supply depot will begin with at the start of each logistics phase. If left as 0 in the editor, then it will start with 1 million freight each turn. This will appear as Depot Freight Level in the rollover text for the depot hex.
4. Increased air group limit which can be selected for air transport missions. This was preventing some airdrops of very large units when lots of small transport groups were available.
5. Low level air HQs with no air doctrine entry will try to use higher HQ air doctrine.

6. Modified air doctrine structure to use dynamic data.
7. Slightly increased air combat fatigue at night
8. Reduced NF escort efficiency
9. Adjusted night combat intensity
10. Increased the chance that Axis NF will attack escorting Allied NF
11. Adjusted air base repair/expansion code, so it will allow some reduced repairs/expansion, even if there is not 100% of required supplies. Reduced air base expansion rate from size 2 to 3.
12. Adjusted low altitude flight detection (made fall off of detection chance less dramatic below 10k feet).
13. Restricted on map support units so they will not be auto reassigned to a different HQ.
14. Added more verbose error code display when game fails to load a save.
15. Editor - Fixed city CSV export/import
16. Added new data elements to the unit and group CSV import/export

V1.01.12 – 6 November 2015

- **New Features and Rule Changes**

1. Updated game engine to 9c DirectX SDK June2010 (latest available)
2. Made several changes to optimize game speed, especially in the logistics phase:
 - a. Added enhanced loop input check routine.
 - b. Reduced memory usage by battle data structure
 - c. Fixes for the path caching
 - d. Fixed supply movement cost calculation code
 - e. Fixed supply code bug (Apls connection)
 - f. Optimized unit scan in various functions
 - g. Made some CR data structures dynamic to reduce memory usage.
 - h. Optimized unit draw function
 - i. Adjusted input polling function
3. Added a new way to browse/edit Air Directives on the map:
 - a. When you select "show air directive targets" mode (shift-y), it is possible to move mouse over the text which will create selection, by marking text and square yellow.
 - b. AD name will blink if has no valid targets or no available aircraft/groups.
 - c. It will display all AD details as live map text, including no fly codes.
 - d. If show aircraft icons is enabled it will show the active aircraft for this AD
 - e. When clicking on text in air planning mode it will bring it to the particular AD edit mode
 - f. When you right click the map in AD edit mode it will exit to the HQ selection screen (in the same way as various detail (ex. unit, air group) screens can be exited)
4. Clicking AD name after air execution will enable AD battle display filter and switch to battle display mode. To disable right click or left click the AD name.
5. Disabled ground the unit box display when show air target is on.
6. Reduced AD text overlapping
7. Reduced lethality of the training flights
8. Increased probability of low exp pilots (≤ 50) to gain experience when flying training flights.
9. Increased air group mileage usage when flying over 25K (by 10% each 1000ft up to 100%)
10. Added extra pilot fatigue when flying over 25K.
11. Adjusted off rail value calculation.
12. Removed redundant off rail calculation after land combat.
13. Improved ground attack and recon AD target selection.
 - a. Reduced chance for the reconned empty air bases to be bombed
 - b. Units shouldn't be reconned when max recon value for the air recon is reached
 - c. If no valid targets available (units, af, etc.) it should switch to interdiction (terrain) type

targets

14. Adjusted unit air recon function.
15. Reduced flight detection
16. Reduced disruption on the single plane flights done by flak.
17. Adjusted air to air combat functions.
18. Increased probability of night intruder attack.
19. Adjusted creation of new AD interface (trying to disable potential access to enemy units).
20. Improved AD display. Inactive ADs appear with black borders and no hex shading.
21. Adjusted air base nationality change code to keep the same unit ID
22. Disabled air/ground exports once end date of the import target item has reached its end date.
23. Adjusted production messages in the supply event log.
24. Static units may no longer be sent to the East Front.
25. Added the map text data to save files, so that future map text changes won't show up in existing games.
26. Made some changes to the appearance of AD target boxes/names/path line.
27. East Front Option changes:
 - a. Reduced the chance for losses in aircraft on the Eastern front in air units under 10 aircraft.
 - b. Units on the East Front will be displayed on the East Front screen in yellow if their TOE is below 70%. They will still be displayed in red if they are unready.
 - c. Army Group HQs may not be removed from the Eastern Front. Army and Corps HQs cannot be removed from the Eastern Front if that size HQ is currently under the Eastern Front requirement.
28. Disabled map centering when selecting air hq on the list to create a new AD.
29. Disabled map centering when clicking on an unconfirmed AD.
30. Disabled hex shading for non-selected (mouse over) ADs.
31. Added a text button on the selected air HQ when creating an AD, which is used to zoom out and center on the air HQ.
32. Editor - Added ability to insert multiple lines in unit database in editor.
33. Editor - Added a find function for factory types when adding a factory to a location.
34. Editor – When a delayed/damage factory is moved to a different location the delay/damage info will now be copied to the new location if no such factory types already exists. The data in the old location will have these values zeroed out.

V1.01.01 – 30 September 2015

• New Features and Rule Changes

1. Starting with this version, use of a non-official scenario or data file in a game is noted to the players. If a game is using a modified file, the following message will appear on the Load Scenario, Load Save, and Multiplayer screens when a game is clicked on: *****Modified scenario and/or data files.** In addition, all scenario files and data files released with this or later versions may only be loaded with this or a later version. Versions prior to 1.01.00 may not load these newer scenario and data files. Old saves may be loaded with this and newer versions.
2. Multiplayer (section 3.3.9) – There is a new messaging capability now built into Multiplayer. You can use this when setting up a Multiplayer game, to better describe the Challenge and also to communicate with your opponent each turn without needing an e-mail address or other contact information. Messages can be up to 255 characters in length and will be visible to all players in a Multiplayer game. When setting up a challenge, note that you can click on the text box near the bottom right of the screen and enter a message of up to 255 characters. Press enter after completing the message, and the message will appear in the message section of the screen. This will show the most recent messages from all of the players. When you start your turn, you may see a message that you have an unread message from your opponent. F12 will bring up the message interface. When

you hit End Turn, you will also have a chance to read messages and add your own message, before the turn is completed and uploaded to the server. Operation Torch users that are able to set up multiplayer games with more than 1 player per side, may also set messages to be sent as public (visible to all players) or private (only visible to players on your side). You can also filter the messages in the list by clicking on the. Players can also filter the messages displayed in their list by player or by turn. There is a maximum of two messages that may be added after loading a save from the server. Any Multiplayer game created while using the 1.01.00 version (or a later version) should only be accepted by a player also using 1.01.00 (or a later version). Ongoing Multiplayer games can be continued. Additional information on Multiplayer features can be found in the Operation Torch Scenario Notes manual.

3. Multiplayer (Torch ground/air commander split) – Air commanders may only compose messages prior to beginning the air execution phase. Once the air execution phase has completed, the game will be uploaded to the server for the next player to download. The air commander will then be placed in Air Review Mode where he will be able to look over the map and view the results of the air execution phase. This is purely a review phase for the air commander since the game has already advanced the turn to the next player. To exit the air review phase and return to the main menu, press the end turn (F12) button.
4. New Feature (section 26.3.6) - Air Weather Forecasts - On the weather screen you will see two dates at the top, the current date on the left and the next turn's date on the right. When you select the next turn's date, you will see the forecast air weather for that turn. The Axis have no early forecast information on Polar Maritime, Tropical Maritime, and Polar Continental fronts until they have arrived on the map. The Allies have no early forecast information on Polar Continental fronts. For these fronts without early information, they must already be on the map before they are included in the next turn's forecast. The forecast is just that, an estimate of where the fronts will go, along with the knowledge of the dominating weather that will exist in each climate zone during the next turn. There are no forecasts for ground conditions.
5. New Feature/Editor - Player Triggered Early End - Any short scenario can have one side designated in the editor so that if that side captures all of the objectives of both sides, the scenario will immediately end. Points will be awarded as if the player held the objectives for all of the rest of the turns of the scenario and will score end game objective points as well. In addition, all units deemed isolated on the side that does not hold an objective will be destroyed and counted in the victory point casualty count. Note that the Victory screen states at the bottom that the game may end early if it is a scenario set up for this. Scenarios that have the possibility of an early end have this noted in their scenario description text on the Load Scenario screen.
6. Support Unit Attachment – Now, independent brigades may attach 2 support units. Other support limits are unchanged, so they are:
 - a. Divisions – 3
 - b. Independent Brigades – 2
 - c. Independent Regiments – 1
 - d. Division Breakdowns (brigade or regiment) - 1
7. Changes to the Eastern Front Option:
 - a. East Front APs - In games where the EF option is on (only campaign games), the Axis player will receive 1 additional AP point per turn.
 - b. East Front air groups that have the potential to upgrade will only do so 10% of the time.
 - c. East Front air groups that are sent west now only have pilots equal to their number of aircraft when they arrive in the west.
 - d. (section 25.1.1) The East Front Advance Axis Penalty VPs are now ½ of what they were. The front line differential is now multiplied by 5 instead of 10 to determine the number of victory points scored.
8. Air Battle Victory Conditions – Victory points scored for aircraft losses in Air Battle scenarios are now divided by 10. We found this was needed after the Victory modifiers were added in the 1.00.29 version.
9. Air Transfer (F10) – Changed/improved Air Transfer interface functionality. It is now called the Air

Navigation Panel to reflect the increased functionality, although air transfers are still executed from this panel. See OnePageGuide4a for complete details.

10. Changes made to the air game rules that are documented in the OnePageGuide 4b:
 - a. Added ability to active/deactivate air directives.
 - b. Added air phase toggle for air superiority and naval patrol ADs allowing ADs to be set to fly in either the friendly or enemy player air phase only, or in both.
 - c. Added night Air Superiority/Intruder missions.
 - d. Added code which enables "Wilde Sau" (Wild Boar) tactics for the German JG 300/JG 301/JG 302 groups starting from July 1943.
 - e. Added detailed info regarding aircraft losses into the supply event log in the air execution section, which is now exported (all air execution data) after air execution into a txt file in the dat/saves/logs folder.
 - f. Historical pilots are designated on the air group detail screen (pilot tab).
 - g. Added new airfield fog of war info functionality.
11. Added strategic recon display - You can now toggle the Show Recon button (shift-t) to either show ground recon values or strategic (city) recon values (or no recon info). When strategic recon is toggled on, rollover info will display factory info, and every enemy city hex on the map will be shaded based on the number of turns since the last strategic intel for the city (darker the hex, the longer it's been).
12. Added how long has it been since the last recon photo in the hex popup when factory location toggle is turned on.
13. Changes to air and flak combat:
 - a. Max speed altitude bands were not hooked correctly. Now aircraft should perform different on various altitude.
 - b. Added code which makes harder to intercept fast bombers by slow fighters
 - c. Made A2A more lethal and AA less dangerous
 - d. Increased intensity of night combat
 - e. Tweaked night detection formulas
 - f. Damaged planes have more chances to participate in the air combat.
 - g. Made interception numbers less predictable (i.e. not exactly equal to number of bomber).
 - h. Added unit resupply code during flak fire
 - i. Adjusted flak ammo usage
 - j. Added flak ammo usage info to the air execution log
 - k. During maintenance phase pilot accumulated fatigue is not reduced to zero, but divided by 4, unless group is set to rest or is idle.
 - l. Slightly reduced air ops losses on landing.
 - m. Adjusted a2a/flak damage
 - n. Increased AA bonus for mobile flak guns
14. Air and ground unit HQ attachment flags are now automatically cleared at the start of any scenario so units can change their HQ attachment on turn 1.
15. Air groups which fail to fly out from captured base will show up immediately in the NR with zero planes and pilots.
16. Difficulty levels now have an impact on the air portion of the game as follows:
 - a. Morale level: impacts air group morale level when calculating available mileage
 - b. Morale level: impacts air group NM morale level when gaining morale
 - c. Morale level: impacts pilot skill level in all air combat and air attacks
 - d. Admin level: impacts aviation support level when repairing AC
17. Editor - Named pilots to specific units in Editor - Added the capability to add "real" pilots to units via editor:
 - a. Added a pilot list for the air groups. It is possible set some pilots as historical. When set it can be modified by editing name, experience, fatigue and delay. Delay is a new parameter which works exactly as other delays: decreased each turn till 0 when pilot arrives to the group or to the pool. All "historical" pilots appear on the top.

- b. It is also possible to delete pilots. If average pilot experience differs from the one set for the group, a new entry appears in the parenthesis displaying average pilot experience. When clicked it will try to adjust pilot experience to match as much as possible the value set for the air group.
 - c. Also, to change aircraft type for the air group you need to click "Aircraft:". Removed previous string to save a space on the bottom.
 - d. Made a fix for the CUT/PASTE function for the air groups - it should re-link pilots to the air group's new slot.
18. Editor - Updated pilot CSV/CR list screen:
 - a. Added new columns: hist, delay.
 - b. When pilot is attached to the group, you can click his name to open air group detail screen (pilot tab).
 - c. Added pilot nation filter
 - d. Added "active" filter with values - all, active (in group), reserve pool, delayed
 - e. Added historical filter
 - f. Hooked aircraft type filter (the same as on for the air group)
 19. Editor - Make Set All City Control account for the starting location of the EF box by making hexes and cities Soviet controlled based on the start date of the scenario.
 20. Editor – The remove all off map units function now sets the delay of off map air groups to 250.
 21. Changed sound playback engine to choose generic wave parser.
 22. Set map key scrolling to follow preference setting (as scrolling with mouse).
 23. Made enhancements to map draw functions (units/air bases).
 24. AI Improvements – Improved use of artillery support units.
 25. Added ability for all players to load a finished multiplayer game.
 26. Rule Correction/Clarification – During the air execution phase, flak support units attached directly to HQs will act as if they are in the HQs hex for firing at air units (i.e. they will only fire at units that fly over or in some circumstances adjacent to the HQs hex). When they commit to a ground combat, support flak units in HQs will fire at enemy ground support aircraft (they will also participate in the ground combat and their CV will be included).

V1.00.48 – 12 July 2015

- **New Features and Rule Changes**
 1. East Front Option (section 23) – Made a few more balance adjustments to the East Front option that changes the amount of Soviet potential received at different times during the war. While doing this fixed a bug in the AI that was not giving the German AI full credit for some units sent to the East Front box in 1943. With all the East Front changes in 1.00.44 and these mostly minor tweaks in 1.00.48, it's expected that the German player will need to send a significant number of units east periodically during the war as they did historically. This is needed in order to keep the Soviets from scoring significant points for the Allied player and prevent an early end to the game.
 2. New Supply Path Rule (section 20.4.1) – During the logistics phase, a supply path cannot be traced out of a sand hex, but it can be traced into a sand hex. Note that supply paths are traced from a supply source to a unit. So if there is a sand hex between a unit and its supply source, the unit will not be getting supplies.
 3. Improved the random number generation routine.
 4. AI Improvements - Fixed a case of bad Axis AI line forming near Taranto reported in public AAR. Improved Allied AI's ability to capture isolated ports behind their lines Northern Europe in 1944. Improved the Allied AI's use of support units. It will now try to push more support units (especially combat engineers) down to front line corps and divisions, and will attach the more plentiful US combat engineer units to non-US units when they are available.

- **New Features and Rule Changes**

1. Added ability to attach construction units to cities at the cost of 1 AP point per unit. These are attached to cities the same as flak from the City Detail screen. They can be sent back to their HQ at no AP cost by pressing the X next to their name in the City Detail screen. Construction units in cities will automatically attempt to repair factories (including ports and railyards), and repair/expand airbases. Units in cities will be used first, but if deemed insufficient, additional construction units may still be summoned automatically to the hex. Units attached to cities will not be used by the automatic rail repair system.
2. Now all brigade and regiment sized units can attach one support unit. Multi-role units that convert to off-map status will send any attached support unit to the HQ.
3. Added air transfer destination air base resupply code that is immediately activated when an air unit is transferred to an airbase:
 - if air base is empty it will assign it to new air hq (based on max aircraft)
 - if air base is empty it will try to swap air base nationality
 - air base will be resupplied and air support transferred if there is some in the pool. No new air support will be built.
4. Railyard damage was not directly impacting the amount of freight that would be shipped and unloaded at a railyard depot in the hex. Now, there is a percentage chance equal to the railyard damage that the amount shipped to a railyard depot will be divided by 10.
5. An air Group on an isolated air base may not disband.
6. Transferring an air group will send all damaged/reserve planes to the transit air pool. If the air base is isolated they will be destroyed.
7. Interface Adjustment - You can now always access the air base detail screen while in F10 mode by double clicking on an airbase.
8. Formula Adjustment – (Section 14.2.3) the 50 hex range limit for using railyard capacity for movement is changed to a 30 hex limit. Note, the check has always been made from both the starting point and the ending point for a movement of freight or economic goods.
9. Formula Adjustments - East Front Option Changes - Increased German casualties in the East Front box. Germans also now use more fuel/supplies for activities in the East Front box.
10. Formula Adjustments - Section 20.1.7.2 - Significantly increased the attrition to vehicles from resupply operations. Increased both the amount of vehicles damaged and destroyed.
11. Formula Adjustment - Section 21.1.6 - Increased Allied vehicle repair to 50% per turn.
12. Formula Adjustment - Section 21.2.3 – The most that can be repaired per turn by priority repairs is now 20% of the damage (was 25%).
13. Formula Adjustment - Made it easier to cause high amounts of damage to fuel, syn-fuel, and railyards.
14. Formula Adjustment - Reduced the effectiveness of organic (under the hood) airfield radar on intercepts in Africa. It should be harder to effectively intercept raids in Africa due to less developed air defense systems in Africa.
15. Formula Adjustment - The change in 1.00.37 to try minimize warp/rout moves from Africa to non-Africa locations no longer restricts HQs, but it should prevent combat units from making such a move.
16. Formula Adjustment - Improved air mission range calculation in F1 and F9 modes.
17. AI changes
 - a. German AI is no longer disbanding depots in ports when the enemy gets near them.
 - b. Fixed a case where the Allied AI came ashore at Taranto and never invaded anywhere again during a campaign 43.
 - c. German AI isolated unit warps from Corsica to Northern France. Fixed.
 - d. Fixed several other instances of AI moving isolated units out of pockets (26th Panzer and 2 FJ in Italy).
 - e. Altered Axis AI so it will be more likely to send some additional units to the Eastern Front in

late 43/early 44 and again in late summer 44.

18. Clarification – All level 3 depots should be set up in scenarios with rail access to a national supply source (level 4 depot). Only naval shipments to level 2 ports will show a blue line on the map when using the 8 key as it is assumed that all level 3 depots are receiving their freight via land.
19. Clarification – The morale help level directly impacts the national morale levels. An Allied player with a current USA national morale of 60 and an Allied morale help level of 90 will have an effective USA national morale of 54.

V1.00.37 – 7 May 2015

- **New Features and Rule Changes**

1. Revised Map - Changed terrain in Africa in all scenarios (added some impassable hexes in several areas and new rough and impassable terrain near Tripoli). Renamed bocage terrain to bocage/polder terrain, and added bocage/polder terrain to the Netherlands. Although polder terrain has a different look on the map than bocage terrain, they have the same effects on movement and combat. These terrain changes will only exist in newly started games. Old games will retain the old terrain.
2. New Game Option - Added No Beachhead VP to the game options screen so these may be set by the players. This allows the player to adjust the victory points lost for failing to have the required beachheads as of February 1944 and July 1944. If the cumulative penalty box is checked, then the player can enter VPs lost each turn for each hex less than 10 in the required beachhead. In this case, the penalty becomes the maximum penalty possible for each requirement. The standard penalty is 400 for Feb 44 and 1000 for July 44.
3. New Rule - Isolated units will try to resupply themselves from depots to avoid isolation damage.
4. New Rule - Isolated units are not eligible to be sent to the East Front.
5. New Rule - When the defending force is less than 1 regiment (1 or 2 battalions), the battle is never stopped due to poor odds (i.e. the range will close to minimum range in every battle). The Torch expansion will have some on map battalion sized units.
6. Formula Adjustment - Reduced AFV attrition to units making very long distance moves.
7. Formula Adjustment - Made a change to displacement/rout movement priorities to try to limit rout movement of units from Africa to Europe.
8. Changes to Air game:
 - a. New Rule - Flights flying from size 1 airfields in poor and average road system hexes with light mud and heavy mud can get canceled. When planes fly from these bases they have higher chances for operational damage.
 - b. New Rule - Added chance for the extra flight disruption when aircraft gets damaged.
 - c. New Rule - Added extra damage effect to overloaded air fields that are bombed which increases with size of aircraft (engine number).
 - d. Formula Adjustment - Made AS interception more coordinated.
 - e. Formula Adjustment - Adjusted flight detection code.
 - f. Formula Adjustment - Adjusted AS interception and AS vs AS air combat routines.
 - g. Formula Adjustment - Added extra flight disruption when damaged by flak fire.
 - h. Formula Adjustment - Reduced damage done to aircraft on airfields (also increased importance of recon).
 - i. Formula Adjustment - Enhanced air base replacement code so it would replace evenly based on supply priority.
 - j. Formula Adjustment - Adjusted air base supply requirements - should check pilot crews available instead of aircraft.
 - k. Formula Adjustments – Adjusted day and night air combat routines. Slightly reduced damage done during air combat.
 - l. Formula Adjustment - Removed camera device modifier when calculating default load

values.

- m. New Interface - Added a pop-up message when air transports are not able to fly freight due to a lack of nearby freight to carry. This will come up after transports are selected and the launch button is pressed. The message will appear instead of a combat window and will state: Not Allowed! – freight shortage at transport air bases. Freight must be either at the base, or able to be moved to the base from depots (using previously unused vehicles if needed).
 - n. Revised Interface - Removed air execution messages when executing enemy's AD.
 - o. Increased interception resolution speed on high AD execution detail level.
9. Changes to Navel game (including aircraft created naval interdiction):
- a. New Rule - Made fighter naval values reduce total naval interdict values, not only from the auto naval missions as before but also during air superiority flights.
 - b. New Rule - Naval interdiction can damage amphib HQs.
 - c. New Rule and Formula Adjustment - Increased interception effect of Amphib HQ. It will add naval interdiction. Both will be reduced when Amphib HQ gets damaged.
 - d. Formula Adjustment - Slightly increased efficiency for the naval type load out (mines, asw, torpedos).
 - e. Formula Adjustment - Increased effect of naval radar on naval interdiction.
 - f. Formula Adjustment - Made harder to generate high naval interdiction values.
 - g. Formula Adjustments – Adjusted cargo and troop ship losses. Changed naval move attrition formula (done by hex basis). 60% of affected unit personal should get damaged instead of disabled.
 - h. Interface Changes - Changed text message from "SUNK" to "HIT" when a transport is hit and removed from play. Added messages for men disabled (damaged) and lost (killed).
10. Map art - The hex data art file that sets terrain art is now loading only in editor or when starting a new scenario, so once a game is started, changes in the terrain art will not take place (map text changes will appear in old games as that file still gets loaded with each save).
11. Editor - Added new air group data fields to csv export (air insignia).

V1.00.29 – 19 March 2015

- **New Features and Rule Changes**

1. Changes to Garrison rules:
 - a. When Allied units are in two garrison zones and the Axis garrison requirement goes away, it will never return, even if the Allies are no longer in two zones.
 - b. The two Channel Island hexes are no longer considered to be part of any garrison zone.
 - c. The Netherlands garrison region now includes Netherlands hexes in columns in 112 and 113.
2. Formation colors for HQs can now be set in the game and in the editor by going to the unit detail screen for the HQ in question. Unique colors can be set for any HQ, not just army HQs. When resetting these values to default, they will go back to the way they are hardcoded, which for some HQs is white.
3. East Front Transfers (section 23.2.4) - Air groups will now cause morale changes per rule 23.2.4. Previously only ground units did this. The more a/c in the group the greater the likelihood of morale changes. Increased the morale gain/loss due to the movement of ground forces to/from the East Front. Also, the movement of motorized units now has a somewhat higher impact on morale than non-motorized units.
4. Adjusted calculation of CV value of artillery and flak units in the East Front to include the morale of the unit. Also reduced CV values of on-map artillery units on the Eastern Front.
5. Adjustments in air game
 - a. Increased early detection of flights forming close to enemy.
 - b. Adjusted night detection code.
 - c. Adjusted night air combat routines.
 - d. Increased interception probability of recon flights
 - e. Adjusted interception code
 - f. Adjusted flak attack code
 - g. Slightly reduced efficiency of night fighters
 - h. Increased ops losses for night flights
 - i. Tweaked air combat.
 - j. Made manpower a more probable target in case of blind area bombing.
 - k. Made manpower more resistant to GP bombs (not incendiary).
 - l. Increased ops losses for the night flights with no navigation devices (night fighters and bomber command groups tend to have navigation devices).
6. Aircraft can now be manually changed on turn 1 of any scenario.
7. When Italy surrenders and Italian airbases are changed to German nationality, their supply priorities were set to 0 and their Max TOE were set to 1. Now, they retain the setting they previously had.
8. Minor tweaks to AI, including improving Allied AI taking of Southern Italy when it invades Central Italy, and not having German AI fly Nav Patrol missions in the middle of the Tyrrhenian Sea for no reason. Also, the AI used to cheat and sometimes plot naval patrols off of beaches that had been targeted for invasion. This cheat has been removed. Also, fixed a case where a surrounded German unit warped out of the position because the AI wanted to use the unit as a garrison.
9. When “show factory” is toggled on or when setting bomb city air directives, hexes which are within OBOE range in air planning mode will be slightly shaded.
10. Added the ability to set the air execution detail level for each air directive on the air directive summary screen. Each directive can be set to show either ‘none’ (no information during air execution) or ‘all’ (normal information based on air execution phase detail setting).
11. Added ability to have more than 23 air HQs in scenarios (added scroll bars).
12. Adjusted pilot list on the air group screen.
13. Added victory point bar on the campaign game victory screen.
14. Removed irrelevant weather info for the ground support air directive from the air directive summary

screen.

15. Enabled sortable columns on the Air Directive city target selection.
16. The airfield overloaded sign is no longer shown for enemy airfields when FOW is on.
17. Disabled A-36 upgrade to P-51B.
18. Editor – Added an Axis Allies production usage value in the editor that will determine the percentage of production by the Axis Allies in the scenario (distinct from German production).
19. Editor - Added ability in the editor to set up the victory levels for campaign, air battle and the new air campaigns. Designers should note that: 1) Each number once entered should be lower than one on the right and higher to the one on the left 2) The major allied VP level should be positive otherwise it will reset it to defaults.
20. Editor - Added the ability to set air target score modifiers for the various industry types in air campaigns. On the victory screen, each type of target that scores victory points has a number displayed between 0 and 200 that modifies the amount of points scored for that target type (VPs are multiplied by the value/100, so 200 will multiply the points scored by 2). These can be set in the editor for all factory types by clicking on the number in the victory screen, and only those with a value greater than 0 will be shown in-game on the victory screen.
21. Editor - Added ability to set VPs per plane type and number of engines for the Air Campaign games.
22. Rules Clarification – Units that are temporarily motorized and are retaining their motorization each turn pay admin points for the motorization each turn (but not to reduce APs below 0).

V1.00.21 – 18 February 2015

• New Features and Rule Changes

1. Added new generic data - pilot names. Newly generated pilots will be given random names. The existing scenarios have not been fully updated with this feature so starting groups will still have pilot numbers.
2. Newly created airfield units and those created in temp ports are now given a supply priority of 3 when they are created (used to be set to supply priority 0).
3. Units moving in desert hexes, and clear terrain hexes in Africa south and west of hex 124,319 (the coast road), are not charged MPs for moving into an enemy controlled hex unless the hex has a fort level. Any enemy fort construction in the hex will cause the moving unit to pay the normal cost of moving into an enemy controlled hex.
4. Italian reinforcements are now allowed prior to July 43. In the past they were not allowed until after Italy had surrendered.
5. Improved the shipment of supplies by sea to Allied depots that are also connected by rail.
6. The Production Screen is now sorted by alphabetical order within each type.
7. Added new air group CR filters: pct exp/moral/fatigue.
8. Show Completed and Show Resigned check boxes won't reset when re-accessing the MP screen.
9. A few corrections have been made to the map text.
10. Increased amount of Canadian pilots trained each turn (aprox x3).
11. Increased hex interdiction effect modifier for the mountain/heavy urban hexes (should cause lower values).
12. Made it more difficult to reach very high interdiction values.
13. Made naval interdiction values reported in the battle reports more accurate.
14. Increased influence of bad weather on naval interdiction.
15. Increased efficiency of the patrol planes.
16. Increased probability of naval interdiction values reduction for the disrupted flights.
17. Improved automatic load out selection for the naval patrol strikes.

V1.00.13 – 26 January 2015

- **New Features and Rule Changes**

1. New Aircraft Upgrades (section 8.1.8) – US 2-4 engine aircraft may not be used for upgrades 1 month after beginning production. US single engine aircraft are still not available until 3 months after beginning production.
2. Support Units (section 7.5.2) - Italian divisions and divisional breakdowns can now attach Italian and German support units. German divisions and divisional breakdowns can now attach Italian support units. When Italy surrenders, any German support units attached to an Italian unit will be placed in a German HQ.
3. Minimum West Front replacements (section 21.3) – When using the East Front Control Option, at the start of each German logistics phase, 20% of the manpower in the active pool at that moment is reserved to be used by Western Front units only (i.e. this manpower cannot be used for replacements for units on the Eastern Front).
4. Exports (section 21.1.12) - Allied/Axis equipment exports are now impacted by the production usage modifier.
5. Transport losses (section 16.5) - Reduced manpower losses when transports are sunk at sea. Now, ½ of the manpower in the elements destroyed are placed in the manpower transit pool.
6. Air Recon (section 17.3.1.3) - Air recon flights will automatically change their altitude in the target hex by up to 10000 feet in order to reach the most effective altitude for the camera device being used.
7. Editor – Added the ability to set the starting Soviet Potential using a function on the main tab titled Init Soviet Potential. The number in parenthesis next to this function is the current value.
8. Editor - Added a GE/AC and pool nationality mismatch scenario check util item.
9. Slightly reduced flak damage.
10. Increased efficiency of night fighters.
11. Adjusted pilot fatigue recovery.
12. Disabled the “no manpower” message that could appear when adding pilots to air groups on the CR screen.
13. Previously Undocumented Rule – Temporary ports are considered to be national supply sources for the purposes of determining isolation.
14. Added/modified 9 unit symbols and 3 ground element photos.

V1.00.11 – 14 January 2015

- **New Features and Rule Changes**

1. Victory Points (section 25.1.1) – The City Control Point (CCP) Date adjustment divisor was incorrectly stated in the manual to be 4,6,8, and 12. In 1.00.00 it was actually 6,9,12, and 18. In version 1.00.08 it was accidentally changed to 2,6,9 and 12, but in this version it has been corrected back to the intended release values of 6,9,12, and 18.
2. Support units and Refit (section 7.4) – The rules were incorrect and support units were not considered to be in refit mode. Now, support units that are set to supply priority 4 will be treated as if they were in refit mode.
3. Air Base Nationality Switch (section 8.3.4.1) - When airbases switch nationality they will now retain the air base's supply priority.
4. Isolated units that are very low on supplies will suffer additional fatigue and damage to their elements during the logistics phase.
5. CR screen (section 26.2.4.1) - Added the number of pilots/crews to the Air Group tab of the CR screen (near the top of the screen in the list of ready/damaged/reserved aircraft, etc.).
6. Added many new aircraft photos and unit symbols.
7. Changed air maintenance so it repairs aircraft damaged during current day's training missions.
8. Slightly decreased daily pilot fatigue recovery rate.
9. Reset cursor to arrow during the folder selection dialog.
10. Editor - REDUCE REINFORCEMENT DELAYS function will now reduce delays of air groups.
11. Improved the AI to keep it from making impossible moves of units out of nearly closed pockets and from teleporting units around Sardinia and Corsica.
12. Additional changes to the AI in Battleground Italy to try to ensure the Allies invade Italy at some point, even when Messina is being held by the Germans.
13. Improved AI so that it will not attach US fighter units to Bomber Command.

V1.00.07 – 19 December 2014

- **New Features and Rule Changes**

1. Rule Change (section 18.1.1) - Italy will never surrender prior to August 1943. In August 1943, the German garrison value in Italy is never divided by 4 when determining Italian surrender.
2. Rule Changes to the air game:
 - a. Rule change – Victory Conditions (section 25.1.1) – The SBP (Strategic Bombing Points) Date adjustment divisors have been changed to the following: 1943: 2, Jan-Jun 1944: 6, Jul-Dec 1944: 9, 1945: 12 in order to increase Allied bombing points scored. These are intended to offset the changes made below that would otherwise lower Allied bombing points.
 - b. Adjusted factory bombing damage. Reduced damage rate when factory gets to >50% damaged.
 - c. Increased night bombing accuracy against manpower targets.
 - d. Made medium/heavy flak fire more effective at higher altitudes
 - e. Many changes and fixes to the automatic interception code
 - f. Adjusted air combat routines and altitude evade ratings.
 - g. Adjusted airfield targeting routine.
 - h. Adjusted airfield damage.
3. Rule Change (section 16.5.2) – Changed +3 for moving through an enemy controlled sea hex to +15 in step 1 when determining AV (attrition value). This will make sea movement or invasions that trace through enemy hexes more likely to take shipping losses.
4. Rule Change (section 16.7.1) - When calculating the coastal defense value for amphibious attrition (step 2 of 16.7.1) for amphibious HQs at sea (16.6.2.2), ferry hexes are treated as if the coastal defense is in the target of an invasion (i.e. causing more damage to the unit at sea due to the restricted waters).
5. Rule Change (section 16.6.2.2) - Amphib HQs that move at sea using normal Sea Movement can now suffer damage during movement. A pop-up message will appear reporting the damage taken. This is similar to how a unit at sea can have a transport sunk while moving.

6. Rule Change (section 22.4) – Heavy rain was incorrectly stated in the manual as adding 1-4 water to each hex per turn. It was actually adding 2-4. However, this has been changed so that in good road areas it adds 1-2, average road areas 2-3 and poor road areas 2-4. This is intended to simulate better drainage in more developed areas.
7. Rule Change (section 15.5.1) - Reserve units may not trace a path to a battle over a ferry hex (may not commit if separated by a ferry hex).
8. Rule Change (section 21.1.13.1) - Changed German manpower multiplier to 3 in 1945 (was 1).
9. Rule Change - Whenever the Allied player controls a German Nationality National Supply source, the following rules are in effect:
 - a. German units that are destroyed will not return to the game.
 - b. Units withdrawing are no longer required to be at 75% TOE strength before they are withdrawn.
 - c. All frozen German units will unfreeze in the next German logistics phase.
10. Rule Change (section 17.3.9) - An airborne unit that drops and can't trace to a friendly hex is immediately considered isolated and will surrender if forced to retreat (in the past it would rout until it had gone through a friendly logistics phase and was judged isolated).
11. Rule correction (section 9.6) – Aircraft reliability works as described in the manual, but AFV reliability works differently. The reliability rating of an AFV is actually two different items. The first digit represents the reliability of the AFV when moving (if only 1 digit is shown the 1st digit is assumed to be 0). The higher the number, the less likely the AFV will become damaged during movement. The second digit is survivability, and the higher the survivability the less likely the AFV will be destroyed in combat during a special survival check as opposed to just being damaged.
12. Interface addition - Added load out info when comparing aircraft in the CR screen.
13. Interface addition – On the Airbase Detail screen, Assigned tab, an air group that does not report to the same HQ that the airbase reports to will have an asterisk (*) next to its name.
14. Added code that moves unloaded non-Amphib units from sea hexes to land hexes (due to a bug that has been fixed, it was possible for ground units to get into a sea hex without being on ships, so this will move units back to land).
15. AI – Improvements were made in Allied late war offensive AI and German AI reactions to airborne drops in Sicily.
16. Restricted TacB <-> FB aircraft swapouts for the Axis player so these are not allowed. These swapouts are allowed for the Allies for FB units that are trained as bombers. If a TacB switches to FB, it will be trained as a bomber.
17. Automatic aircraft upgrade/swaps in an air group will not happen for the next two logistics phases after the unit has had a change in aircraft.
18. Decreased pilot training losses.
19. Improved the path selection routine for naval movement made during an amphibious invasion (to minimize movement through enemy controlled and neutral hexes).
20. Made map mouse double clicks more responsive.
21. Adjusted progress bar behavior at the end of air execution.
22. Removed message "Only the Soviet player may form new units" when shift-B is pressed.
23. Interface changes (Air Campaign) – The air campaign victory screen no longer reports the victory points for aircraft lost during the turn (now shows N/A). The a/c loss VPs are only shown in the total column. Also note that on the top right of the map the turn VPs are also shown as N/A. Also adjusted the metrics screen to display correct VP charts for the Air Campaign.
24. Added HG and 10th Panzer Division symbols.
25. Made minor map text adjustments.
26. Editor – Added a new general function “Clear Amphib and Airborne Data. This function clears all amphib and airborne target hexes from the unit data.
27. When one player is set to be played by the AI, the human player is now able to see the units on the map during the amphibious landing phase, even when FOW is on. This may result in a little more

information for the German player as Allied units will be fully visible, but we decided that player's would appreciate seeing the invasions.

28. Additional AI Updates

V1.00.00 – 21 November 2014

- **Addendum**

1. Barrage Balloons – All ports are assumed to have barrage balloons that will impact any raid that is bombing anything in the port's hex. Aircraft bombing under 3000 feet have a chance of being destroyed by the barrage balloon equal to two times the size of the port (port 3 means 6% chance bombing aircraft will be destroyed). For night missions, the percentage chance is tripled (so port level 3 has an 18% chance of destruction).
2. Changes to airborne drops:
 - a. Airdrop scatter - Airborne brigade and regiment size units that are dropped have a 2/3 chance of scattering 1 hex. If they scatter into a water hex they are destroyed. No more than one airborne unit will scatter onto any given invasion beach (i.e. scattering airborne will not stop a two unit invasion from coming ashore). There will be a flak combat report in the original drop hex, and then a drop combat report in the hex the unit scatters to.
 - b. Airdrop fatigue - Broken down divisions and broken down regiments (1/ 2/ 3/ units) will suffer 50 additional fatigue when airdropped. Independent regiments and brigades will suffer 25 additional fatigue when dropping (if not broken down into 3 parts). Unified Divisions will not suffer additional fatigue when dropping.
 - c. Airdrop combat - Airborne drops into an empty hex may be engaged by nearby units in reserve mode. After the combat, if the airborne is a brigade or regiment size unit and it has lost the combat, it will be destroyed. If it is a division it will still land and take control of the hex after the combat. An airborne brigade or regiment size unit that loses a battle caused by an airdrop is destroyed. Divisions will attempt to retreat to an adjacent hex (or the same hex if only engaged by reserve units from outside the drop hex). Note that an airborne unit can lose a battle to airfield ground crew, flak attached to a city and HQ units, and currently when this happens no units will appear listed for the defender in the combat report.
 - d. Airdrop interdiction - Interdiction created by airborne regiments and brigades is only 8 points per hex (instead of 33 for divisions).
3. Changed German manpower multiplier to 5 in 1944 (was 3).
4. EF Control Option changes.
 - a. When the EF control option is turned on, 50,000 vehicles are added to the German damaged vehicle pool.
 - b. The ratio of German fighters (F, FB, NF) to other German aircraft on the East Front will have an impact on aircraft losses. The lower the number of fighters to other a/c, the higher the a/c losses that can be expected.
5. Airbases that are captured will lose some men in the airbase unit due to retreat attrition and the rest will return to the manpower pool.
6. Disbanded depots will try to ship some of their freight by rail to other type 1 depots. Also, a small amount of the freight will be removed, a small amount will be destroyed (with destruction of fuel and supplies from the pool), and some will convert to fuel and supplies and be placed in the location.
7. Interface Changes
 - a. Added a green border around newly arrived reinforcements on the map when the view unit modes button is toggled on (shift-r).
 - b. Adjusted arrival/withdrawal screens. It now includes units just arrived in the current turn. If you click once on the unit name, info about the unit will appear on the right side of the screen. If the unit has just arrived and it is on the map, you can click on its name again and be taken to the unit on the map.

- c. Added plane shortage numbers on the production screen (numbers in red, they indicate how many a/c of this type are needed by the units using them to reach full strength).
 - d. On the unit TOE screen, in the unit's actual TOE, substituted elements appear with an * sign
8. When a merge unit is executed, any elements over 100% of TOE will be sent back to the pool (damaged elements first).
 9. Combat Resolution Message Level - Made combat resolution message level in the air phase operate as if it is 1 less than the stated value (i.e., requires a 2 to see a combat window).
 10. Added interdiction effect from ground attack - unit target. It is significantly less than the interdiction added by a "normal" interdiction mission. The losses by the unit and the interdiction created will be shown in the Air Summary screen and the battle detail screens.
 11. If an air directive is set to bomb unit and not interdict, and no unit could be found, it will try to switch to air interdiction.
 12. The Western Allies will never launch an air mission that is targeted against a non-German manpower target (even if an AD sets manpower as a target).
 13. In the air campaign scenario there is one line displaying the VPs for Western Allies aircraft losses (1 per a/c) on the victory screen.
 14. Only a/c changes (upgrades/swaps) to a/c of a different type or a different number of engines will cause a reduction in pilot experience (-2 in each case, max of -4).
 15. In section 16.3.2, when calculating the AV, changes have been made to reduce the ability to move 1 hex at a time by sea and suffer less damage than moving through many hexes at once (various steps that could truncate values have been changed to allow for the possibility of rounding up instead of just truncating the AV value).
 16. Aircraft flying under 5000 feet can suffer additional op losses, with the lower they fly the greater the op losses. Extremely high experience pilots can avoid most/all of the extra op losses. Note: Night missions already have higher op losses to account for night flying risk.
 17. Some damaged planes, when swapped out, will be written off.
 18. Hiwi's have been removed from the game. If Hiwi's are created in the editor, they are converted into normal support squads when a scenario is loaded.